# Zanzibar Protectorate.

BUREAU OF HYGIENE & TROPICAL DISEASES
LIBRARY
21 DEC 1931

# Annual Report

ON THE

# Medical and Sanitary Divisions

FOR THE YEAR

## 1930.

74

ZANZIBAR:
PRINTED AND PUBLISHED BY THE GOVERNMENT PRINTER.
1931.

Office of the Director of
Medical and Sanitary Services,
Zanzibar, 21st July, 1931.

Sir,

I have the honour to submit for the information of His Excellency the British Resident and for transmission to the Right Honourable the Secretary of State, the Medical Report on the Health and Sanitary conditions of the Zanzibar Protectorate for the year 1930, together with the Returns, etc., appended thereto.

I have also the honour to submit the Annual Report of the Veterinary Division.

I have the honour to be,
Sir,
Your obedient servant,

J. A. TAYLOR,
*Director of Medical and Sanitary Services,*
*Zanzibar Protectorate.*

The Honourable,
The Chief Secretary to the Government,
Zanzibar Protectorate.

Digitized by the Internet Archive
in 2019 with funding from
Wellcome Library

https://archive.org/details/b31479777

# CONTENTS.

BUREAU OF HYGIENE & TROPICAL DISEASES
LIBRARY
21 DEC 1931

## MEDICAL AND SANITARY DIVISIONS.

## SECTION I.

PAGE.
ADMINISTRATION—
(A) Staff ... 1
(B) Legislation affecting public health enacted during the year ... 2
(C) Financial ... 2

## SECTION II.

PUBLIC HEALTH—
(A) General Remarks ... 4
  1. General Diseases ... 8
  2. Communicable Diseases—
    (*a*) Mosquito or Insect-borne Diseases ... 11
    (*b*) Infectious Diseases ... 14
    (*c*) Helminthic Diseases ... 17
(B) Vital Statistics—
  1. General Native Population ... 19
  2. General European Population ... 22
  3. European Officials ... 22
  4. Non-European Officials ... 23
  5. Police Force and Prison Staff ... 24

## SECTION III.

HYGIENE AND SANITATION—
(A) General review of work done and progress made ... 25
  1. Preventive Measures—
    (*a*) Mosquito and Insect-borne Diseases ... 25
    (*b*) Epidemic Diseases ... 27
    (*c*) Helminthic Diseases ... 31
  2. General Measures of Sanitation ... 31
  3. School Hygiene ... 35
  4. Labour Conditions ... 37
  5. Housing and Town Planning ... 37
  6. Food in Relation to Health and Diseases ... 38
  7. Reduction of Vermin ... 40
(B) Measures taken to spread the knowledge of Hygiene and Sanitation ... 41
(C) Training of Sanitary Personnel ... 41
(D) Recommendations for future work ... 41

## SECTION IV.

PAGE.

PORT HEALTH WORK AND ADMINISTRATION ... 42

## SECTION V.

MATERNITY AND CHILD WELFARE ... 45

## SECTION VI.

HOSPITALS AND DISPENSARIES—

(A) Out-patients ... 46
District Dispensary Service ... 47
(B) In-patients ... 48
1. Zanzibar Hospitals ... 49
(*a*) European ... 50
(*b*) Asiatic and Native ... 50
2. Mkokotoni Hospital ... 51
3. Chake Chake and Mkoani Hospitals ... 51
4. Wete Hospital ... 52
(C) Operations ... 54
(D) Medical Boards and Examinations ... 54
(E) X-ray Examination ... 55
(F) Dental Service ... 55
(G) Eye Clinic ... 55
(H) Infectious Diseases Hospital ... 56
(I) Buildings ... 56

## SECTION VII.

PRISONS AND ASYLUMS—

(A) Prisons ... 57
(B) Lunatic Asylum ... 58
(C) Poor Asylum ... 58
(D) Leper Settlement ... 59

## SECTION VIII.

METEOROLOGICAL ... 59

## SECTION IX.

SCIENTIFIC—

(A) General ... 60

(B) Bacteriological Laboratory Reports—

1. Zanzibar ... 60
2. Chake Chake ... 63
3. Wete ... 63

## RETURNS.

### TABLE I.

PAGE.

(*a*) European Staff ... 64

(*b*) Principal Members of Subordinate Staff ... 64

(*c*) Principal Changes ... 65

### TABLE II.

FINANCIAL—

(*a*) Expenditure ... 66

(*b*) Receipts ... 66

### TABLE III.

(1) Statistics of Population ... 66

(2) Births registered in Zanzibar Island ... 66

(3) Deaths registered in Zanzibar Island ... 67

(4) Comparative Statement of Births and Deaths, Zanzibar Island ... 67

(5) Comparative Statement of Births and Deaths, Pemba Island ... 67

(6) Comparative Statement of Births and Deaths, Zanzibar Protectorate ... 67

(7) Births registered in Zanzibar Town ... 68

(8) Deaths registered in Zanzibar Town ... 68

(9) Causes of Deaths in Zanzibar Town ... 68

### TABLE IV.

METEOROLOGICAL RETURN ... 70

### TABLE V AND VI.

Diseases and Deaths (In-patients) ... 71

Diseases (Out-patients) ... 71

## APPENDICES.

PAGE.

I. Registration of Medical Practitioners, Dentists and Druggists ... 80
II. Reports on Leper Settlement ... 80
III. Control of Opium ... 88
IV. Report of Zanzibar Maternity Association ... 89
V. Report of Dental Surgeon ... 93

## VETERINARY DIVISION.

### SECTION I.

ADMINISTRATION—

A. Staff ... 95
B. Financial ... 95
C. Legislation ... 95

### SECTION II.

DISEASES OF ANIMALS—

A. Diseases of Ruminants ... 96
B. Diseases of Equines ... 97
C. Diseases of Canines ... 97
D. Diseases of Birds ... 97

### SECTION III.

Government Dairy, Mji Mpia ... 98

### SECTION IV.

Meat Inspection ... 98

### SECTION V.

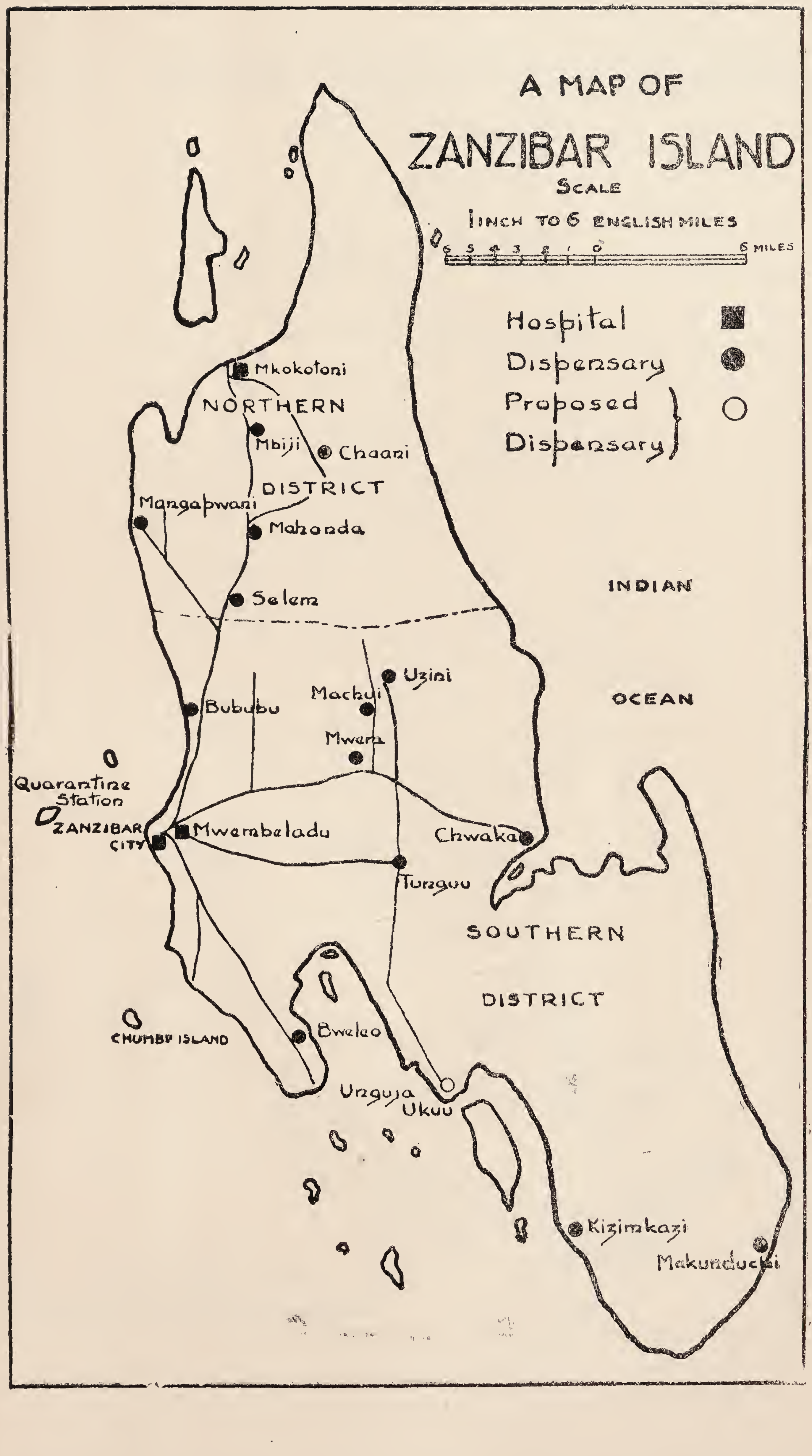
Quarantine Station, Pigaduri ... 99

### SECTION VI.

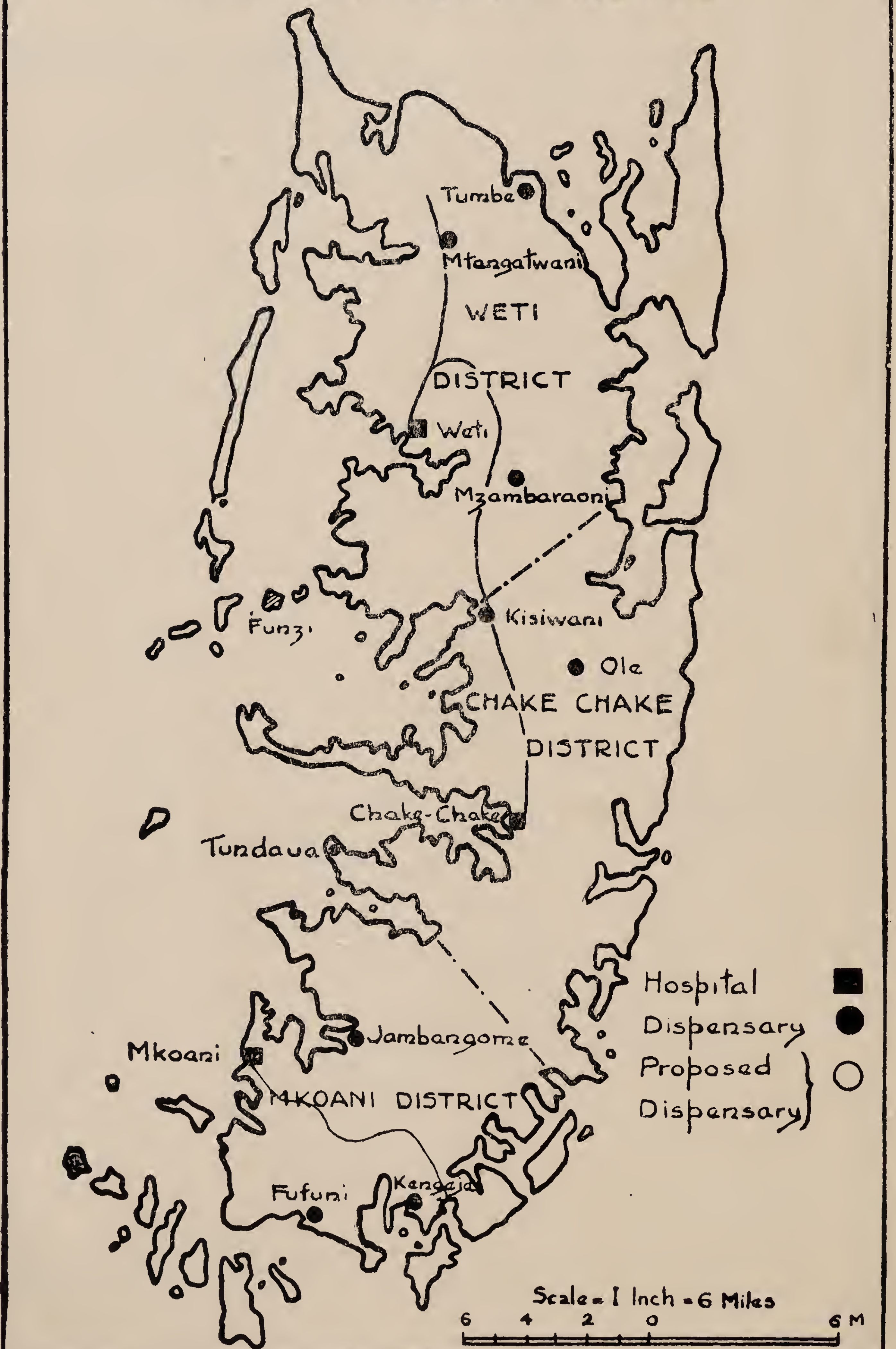
Goat Lairage ... 99

### TABLES.

Table I Death Returns ... 99
,, II Importations ... 100
,, III Exportations ... 100
,, IV Veterinary Hospital Returns ... 101
,, V Abattoir Returns ... 102
,, VI Laboratory Returns ... 103
,, VII Post-Mortems Returns ... 104


A MAP OF
ZANZIBAR ISLAND
SCALE
1 INCH TO 6 ENGLISH MILES
6 5 4 3 2 1 0
6 MILES
Hospital ■
Dispensary ●
Proposed Dispensary ○
Mkokotoni
NORTHERN
DISTRICT
Mbiji
Chaani
Mangapwani
Mahonda
Selem
INDIAN
OCEAN
Uzini
Machui
Bububu
Mwera
Quarantine Station
ZANZIBAR CITY
Mwembeladu
Chwaka
Tunguu
SOUTHERN
DISTRICT
CHUMBE ISLAND
Bweleo
Unguja Ukuu
Kizimkazi
Makunduchi

SKETCH MAP OF PEMBA ISLAND



# Zanzibar Protectorate.

## REPORT ON THE MEDICAL AND SANITARY DIVISIONS

### FOR THE YEAR 1930.

## I. ADMINISTRATION.

### (A) STAFF.

The establishment for 1930 as sanctioned in the estimates was as follows:—

EUROPEANS.

One Director of Medical and Sanitary Services.
One Deputy Director of Sanitary Services.
One Resident Surgical Officer.
Nine Medical Officers.
One Accountant and Storekeeper.
One Sanitary Superintendent.
One Sanitary Inspector.
One Matron.
Eight Nurses.
Two Missionary Nursing Sisters, Leper Settlement.

ASIATICS.

One Assistant Surgeon.
Seven Sub-Assistant Surgeons.
Six Dispensers.
Two Dispensers, Probationers.
Twenty Sanitary Inspectors.
One Chief Clerk.
Eleven Clerks.
One Senior Laboratory Assistant.
One Junior Laboratory Assistant.
One Assistant Storekeeper.
One Engineer Foreman.
One Instructor, Native Dispensers.

NATIVES.

One Dispenser.
Two Dispensers, Probationers.
One Laboratory Assistant.
Thirty-one Junior Dispensers.
Hospital, Dispensary, Laboratory and Store Attendants.
Infectious Diseases Hospital Attendants.
Quarantine Station Attendants.
Vaccinators.
Menial Staff.

## (B) LEGISLATION AFFECTING PUBLIC HEALTH ENACTED DURING THE YEAR.

1. Decree No. 9 of 1930.—Amendment to the Dangerous Drugs Decree, 1927, making minor amendments and providing for the control of consignments of drugs in transit not involving transhipment.

2. Government Notice No. 17 of 1930, under Section 4 of the Diseases of Animals Decree, 1923, prohibiting importation of canines and felines from India.

3. Government Notice No. 46 of 1930, under Section 3 of the Vaccination Decree, Chapter 20 of the Revised Laws of Zanzibar, 1922, making vaccination and re-vaccination in certain cases compulsory.

4. Government Notice No. 138 of 1930, under Section 2 of the Diseases of Animals Decree, 1923, notifying the inclusion of the diseases melitococcosis and infectious abortion.

5. Government Notice No. 151 of 1930, under Section 47 (1) of the Customs Management Decree, 1926, making compulsory the disinfection of all worn clothing other than personal apparel imported into the Protectorate.

## (C) FINANCIAL.

(*Vide* Table II for further details.)

### Revenue.

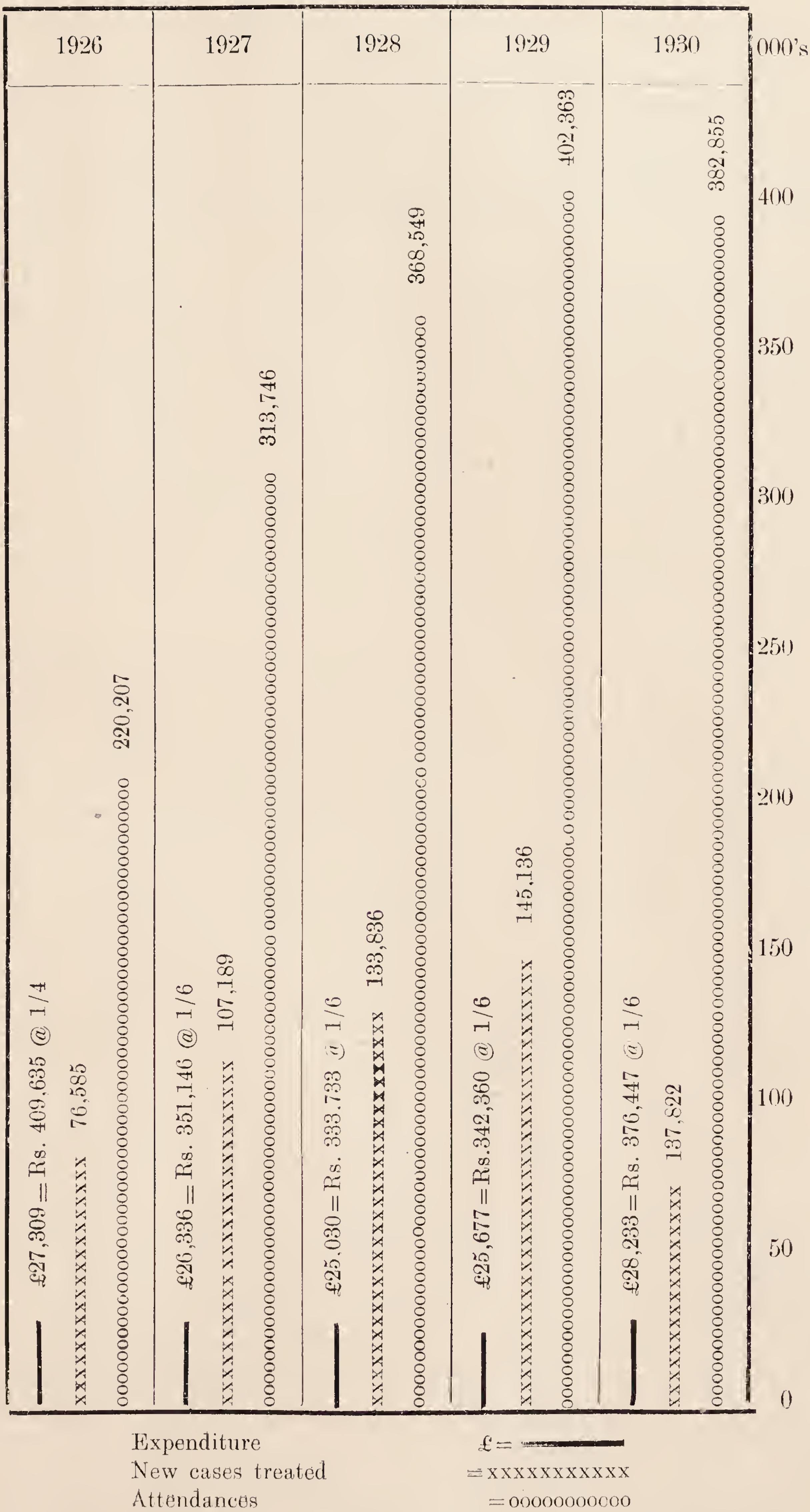
| | £ |
|---|---|
| Hospital fees, sale of drugs, etc. ... | 1,290 |
| Contribution from other dependencies towards Quarantine Services ... | 2,637 |
| Total Revenue ... | 3,927 |

### Expenditure.

| | £ |
|---|---|
| Personal Emoluments ... | 37,859 |
| Other Charges ... | 10,712 |
| Special Expenditure ... | 1,917 |
| Total Expenditure ... | 50,488 |

Deducting the cost of the Veterinary Division and the contribution of the other dependencies towards the cost of the Quarantine Service, the Medical Department expenditure for the year amounted £46,560, or 9.41 per cent of the total revenue and 9.17 per cent of the total expenditure of the Protectorate for the year. These percentages, however, would be considerably reduced if Street Cleaning and certain smaller items such as Burial of Destitutes and Purchase of Opium (for habitués) were shown under a more appropriate head.

Comparative chart showing expenditure, new cases treated and attendances during the five years 1926-1930.



Expenditure includes personal emoluments of the Director of Medical and Sanitary Services and the medical staff, excluding sanitation, biological and veterinary divisions.

The treatment of lepers and expenses in connection with the Leper Settlement are not included.

# II. PUBLIC HEALTH.

## (A) GENERAL REMARKS.

The public health of the Protectorate was adversely affected during the past year by an epidemic of small-pox, by unfavourable economic conditions and, more especially in Zanzibar Town, by the exceptionally heavy rainfall during the first quarter of the year.

After complete freedom from the disease for two and a half years a case of small-pox was discovered on the 11th of March in a house on the outskirts of Zanzibar Town. From this date further cases occurred spasmodically in various localities in Zanzibar island and on the 11th of June a case was reported from Pemba. In all, 212 cases occurred, 115 in Zanzibar island and 97 in Pemba, and of these 49 terminated fatally. The last case occurred in Pemba on the 27th of September and in Zanzibar island on the 1st of November. At the end of the year, therefore, both islands could again be considered free from the disease.

The effects on the death rate of adverse economic conditions are commented upon under "Vital Statistics" on page 20. The town population as would be expected were the chief sufferers. Unable to obtain a living in the districts, many natives gravitated to the town, where, however, conditions were rather worse than better, and not only more deaths resulted, but both serious and minor ailments were exceedingly prevalent throughout the year. The whole native population being infected with malaria and ankylostomiasis to a greater or less extent, any additional adverse factor such as insufficient food, soon, especially in the case of ankylostomiasis, leads to the appearance of clinical symptoms of the disease itself and to increased susceptibility to other diseases.

In Zanzibar, the rainfall for the year amounted to 66.27 inches on 116 days as compared with an average taken over 37 years of 60 inches on 103 days. During the first quarter, 39.95 inches were recorded as compared with 22.2 inches for the same period in the previous year; pools and flooded areas were no sooner dealt with than re-flooding occurred, and mosquitoes were prevalent throughout the town. As a result the town returns show an increased number of cases of malaria and its sequelæ, such as myalgia and rheumatism, among all communities and the deaths notified as due to malaria numbered 140 as against 62 in 1929 and 76 in 1928.

During the past year the attendances for treatment at all Government hospitals and dispensaries numbered 382,855 of which 137,822 were new cases and 245,033 re-attendances. A certain number of cases treated by Medical Officers on tour and 168 cases of small-pox treated in isolation camps are not included in these figures, but there remains some decrease in attendances as compared with the previous year. The following table shows the number of attendances for each of the five years 1926-1930:—

| | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|
| New Cases ... | 76,585 | 107,189 | 133,836 | 145,136 | 137,822 |
| Repetitions ... | 143,622 | 206,557 | 234,713 | 257,227 | 245,033 |
| Total Attendances ... | 220,207 | 313,746 | 368,549 | 402,363 | 382,855 |

Reference to the table on page 46 shows that the decrease in last year's figures is accounted for by the smaller attendances at most of the dispensaries in the districts. Some of the dispensaries were closed for part of the year owing to an insufficient number of trained dispensers being available for replacement purposes. Other dispensaries showing a decrease in attendances are almost invariably those longest established, and examination of the returns from these show the reduction as due to a decrease in cases of tropical ulcers and yaws. Early treatment of these conditions has greatly diminished their number throughout the Protectorate.

Notwithstanding a decrease in the total number of attendances, the number of women treated increased considerably. The number and percentage of each sex treated during the past and each of the four preceding years were as follows:—

| | New-Cases Treated. | | | | Percentage. | | | |
|---|---|---|---|---|---|---|---|---|
| | 1927 | 1928 | 1929 | 1930 | 1927 | 1928 | 1929 | 1930 |
| Males | 83,100 | 102,137 | 107,811 | 96.199 | 77.53 | 76.31 | 74.29 | 69.80 |
| Female | 24,089 | 31,699 | 37,325 | 41,623 | 22.47 | 23.69 | 25.71 | 30.20 |
| | 107,189 | 133,836 | 145,136 | 137,822 | 100.00 | 100.00 | 100.00 | 100.00 |

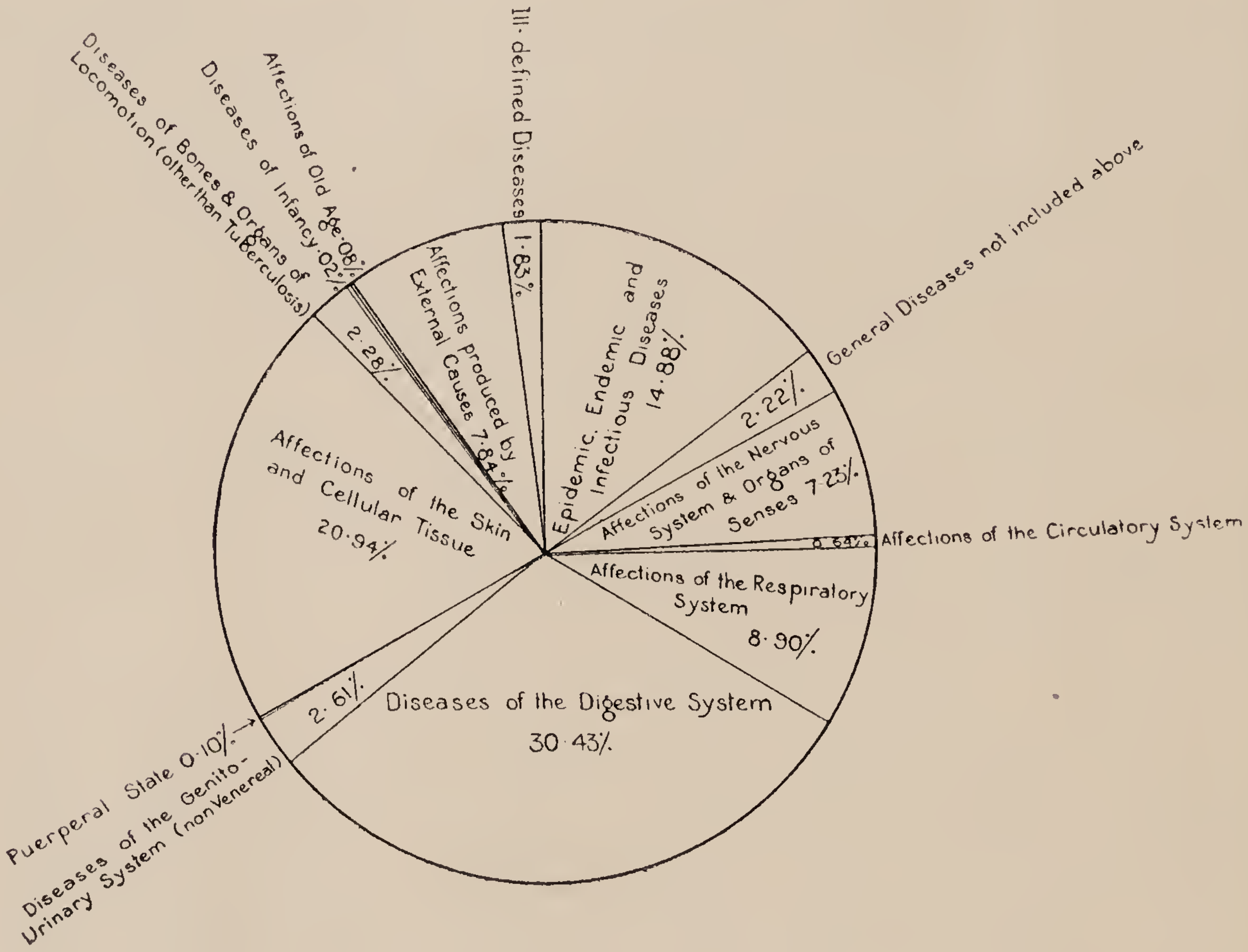
The women to a much greater extent than the men are imbued with superstition and it is they who insist on charms and incantations and delay calling in skilled medical assistance until too late. The steady increase year by year in the number seeking treatment is however an encouraging augury for future progress when greater facilities for treatment and increased supervision are made available.

In previous reports, the urgent need has been stressed for a Medical Officer to devote his whole time to the District Dispensary Service in Zanzibar Island. During the past year only the part time of a Medical Officer was available with the result that an insufficient number of dispensers could be trained for replacements and adequate supervision was impossible.

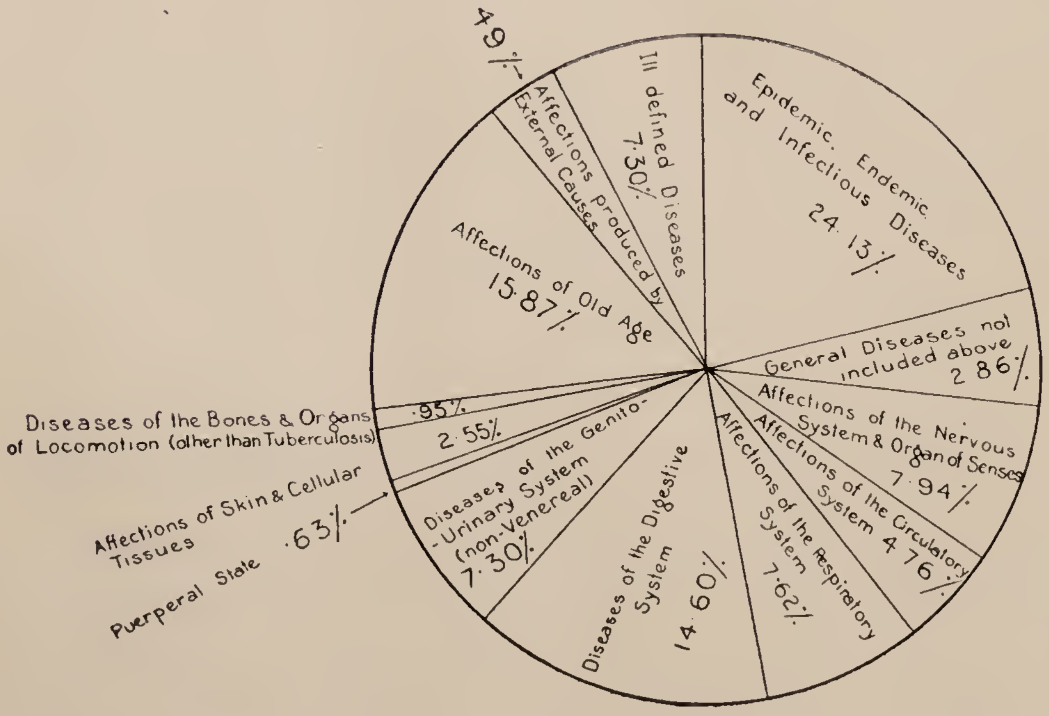
The number of patients treated in Government Hospitals during the year was 3,962 as compared with 3,666 in 1929 and 3,785 in 1928. Hospital accommodation in the Protectorate is wholly inadequate; there is always a long waiting list and until additional accommodation is provided any increase from year to year in the number of admissions merely signifies that patients are being discharged, earlier than would otherwise be advisable, to make room for more urgent cases.

## Diagram showing the Proportion of the different Diseases (with deaths) under each Group treated at Hospitals and Dispensaries.

Total Cases 137,822.

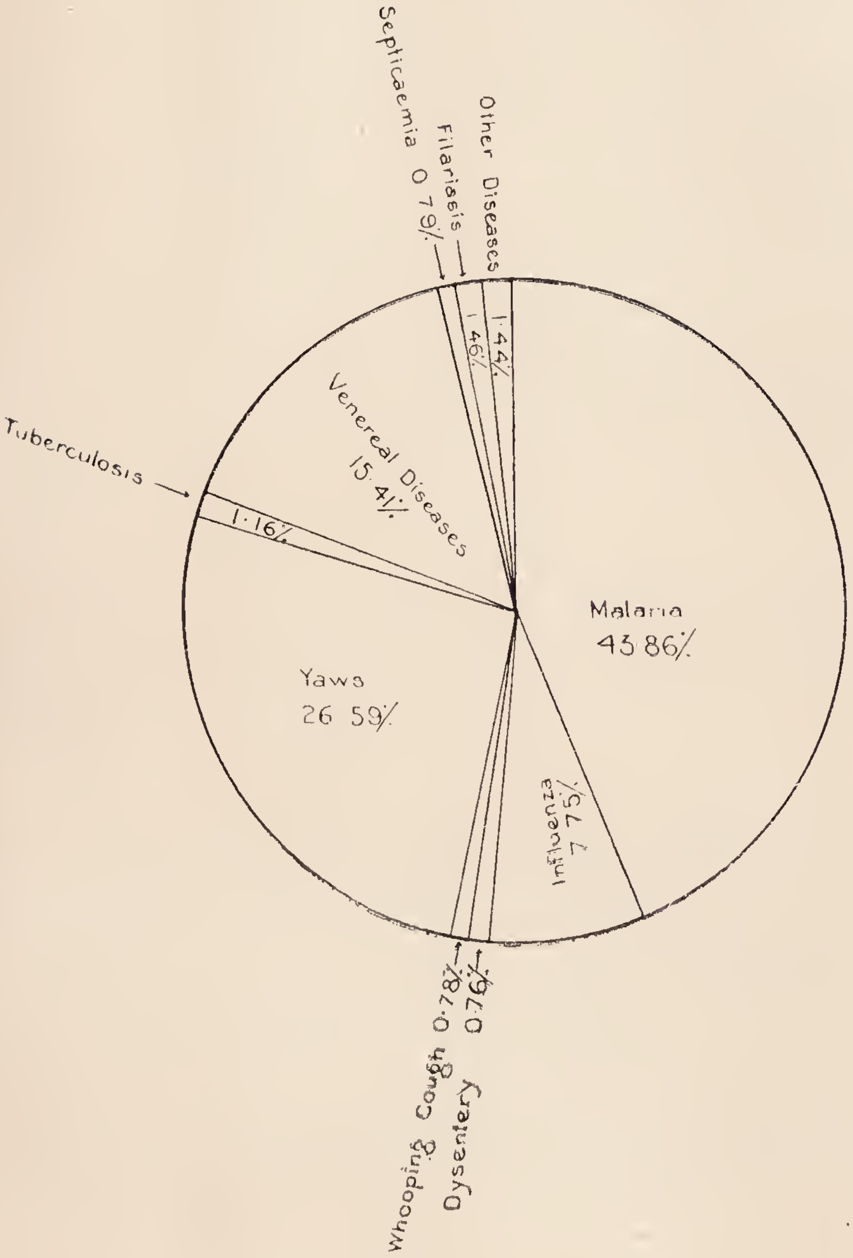


Total Deaths 315.

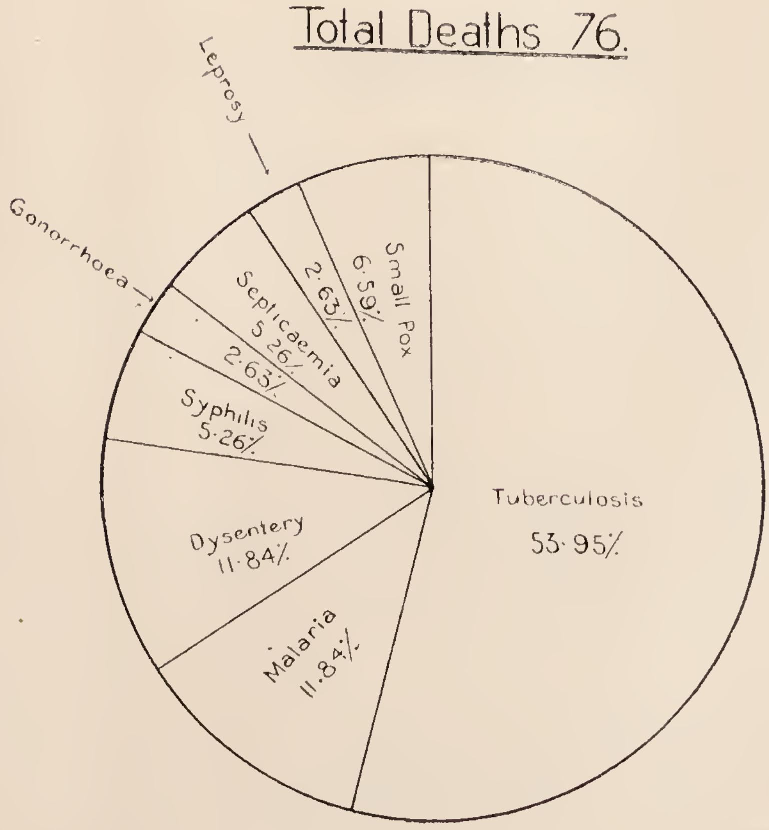


# Diagram showing the Proportion of the different Epidemic Endemic & Infectious Diseases (with deaths) under each Group treated at Hospitals and Dispensaries.

Total Cases 20,504.



Total Deaths 76.



The following table shows the total number of cases in each Group of diseases treated during the year and the percentage of the number of cases in each Group to the total number of cases treated:—

| | Group. | Cases. | Percentage of total number of cases. |
|---|---|---|---|
| I. | Epidemic, Endemic and Infectious Diseases ... | 20,504 | 14.88 |
| II. | General Diseases not included above ... | 3,065 | 2.22 |
| III. | Affections of the Nervous System and Organs of Senses ... | 9,966 | 7.23 |
| IV. | Affections of the Circulatory System ... | 878 | 0.64 |
| V. | Affections of the Respiratory System ... | 12,263 | 8.90 |
| VI. | Diseases of the Digestive System ... | 41,934 | 30.43 |
| VII. | Diseases of the Genito-Urinary System (non-venereal) | 3,592 | 2.61 |
| VIII. | Puerperal State ... | 133 | 0.10 |
| IX. | Affections of the Skin and Cellular Tissue ... | 28,855 | 20.94 |
| X. | Diseases of the Bones and Organs of Locomotion (other than Tuberculosis) ... | 3,136 | 2.28 |
| XI. | Malformations ... | 9 | 0.00 |
| XII. | Diseases of Infancy ... | 28 | 0.02 |
| XIII. | Affections of Old Age ... | 120 | 0.08 |
| XIV. | Affections produced by External Causes ... | 10,812 | 7.84 |
| XV. | Ill-defined Diseases ... | 2,527 | 1.83 |
| | | 137,822 | 100.00 |

The percentages for the different Groups correspond very closely with those for previous years. As compared with 1929, Groups I and IX show the greatest decrease: Group I from 15.94 to 14.88 owing to a decrease in the number of yaws and venereal disease cases treated, Group IX from 21.90 to 20.94 owing to a decrease in tropical ulcers. The counterbalancing increase is found chiefly in Group VI in which there are a greater number of cases in spite of the reduction in total attendances.

## 1. GENERAL DISEASES.

*General Diseases not included in Group I.*—As in previous years rheumatism accounts for more than half the cases in this Group. Most of the conditions recorded under rheumatism however would be more correctly placed among other diseases such as malaria, filaria and gonorrhœa of which they are usually the symptoms or sequelæ. True rheumatic fever if existent at all is extremely rare, and the cases recorded under acute rheumatism are merely cases with pains and fever for which no precise cause can be determined. Similarly anæmia and diseases of the spleen, the next most common diseases in the Group, are almost invariably the results of other conditions, more especially malaria and ankylostomiasis. Cancer again shows an increase, 28 cases being recorded as compared with 25 in 1929, 19 in 1928, 11 in 1927 and 6 in 1926. Of the 28 patients last year, 20 were males and eight females; six Asiatics (four Arabs) and 22 Africans. Non-malignant tumours, consisting chiefly of cysts and adenomata, numbered 115 as against 116 in the previous year.

*Affections of the Nervous System and Organs of the Senses.*—These consist for the most part of headache and minor ear and eye affections and are often the symptoms or sequelæ of other diseases. The following table compares the incidence of the more serious conditions with that for the previous two years.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Meningitis ... | 3 | 2 | 7 |
| Locomotor Ataxia ... | 8 | 11 | 30 |
| Myelitis ... | 2 | 1 | 6 |
| Spastic Paraplegia ... | 1 | 10 | 10 |
| Apoplexy and Paralysis ... | 83 | 97 | 108 |
| Epilepsy ... | 13 | 36 | 21 |
| Cataract ... | 173 | 352 | 173 |
| Mastoiditis ... | 21 | 9 | 8 |

The increase in the number of cases of locomotor ataxia is noteworthy, and it is a question of interest whether the treatment of a large number of cases of yaws in recent years may not be removing some of the immunity which this disease undoubtedly confers against syphilis and its sequelæ.

Eye affections of all kinds are extremely common among the natives of the Protectorate and during the past year a special eye clinic (see page 55) has been opened in Zanzibar to provided greater facilities for treament.

*Affections of the Circulatory System.*—Of 878 cases in this Group, lymphangitis and lymphadenitis. chiefly of filarial origin, and hæmorrhoids account for 556 and 173 respectively. In 1929 the figures were 695 and 171. Mitral disease, from 35 to 32 and myocarditis from 52 to 38 also show a decrease.

*Affections of the Respiratory System.*—The numbers of these treated as compared with the two previous years were as follows:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Bronchitis ... | 8,785 | 9,298 | 9,695 |
| Broncho-Pneumonia ... | 10 | 51 | 60 |
| Pneumonia ... | 150 | 160 | 112 |
| Pleurisy ... | 80 | 71 | 102 |
| Asthma ... | 488 | 657 | 661 |

It is satisfactory to note the decrease in pneumonia. Admissions to hospital for this disease numbered 74 with 11 deaths as compared with 59 and 10 respectively in the previous year, but only 29 deaths were returned from Zanzibar town as against 44 in 1929.

Asthma again shows an increase; the climatic conditions are peculiarly unfavourable to persons at all susceptible to this disease and it is a cause of great discomfort and distress especially to Europeans and Asiatics.

*Diseases of the Digestive System.*—This is by far the largest Group, containing 41,934 cases or 30.43 per cent of the total number of cases treated during the year. Ankylostomiasis (see page 17) of which there were 14,087 cases, together with minor ailments constitute most of the cases in the Group. Diseases of the teeth and gums again show an increase, the cases numbering 5,643 as compared with 5,588 in the previous year, but as stated in previous reports, these figures give little indication of the extent to which dental treatment is required. The hope expressed in the 1929 report that a whole-time dentist might be appointed, who would as part of his duties train the native dispensers to render some assistance, has not materialized, but provision for the appointment has been included in the estimates for 1931.

Admissions to hospital of cases in this Group numbered 579 with 46 deaths, as compared with 555 admissions and 44 deaths in the previous year. Of the deaths, 18 were due to ankylostomiasis, 13 to hernia, 3 to enteritis (under 2 years) and 2 to appendicitis. In all, 384 cases of hernia, 20 of appendicitis and 1 of peritonitis are returned as compared with 461, 19 and 6 respectively in 1929. Of the cases of hernia, 10 were returned as femoral, 320 as inguinal, 19 as umbilical and 35, with 6 deaths, as strangulated.

*Diseases of the Genito-Urinary System (non-venereal).* Of the 3,592 cases in this Group, the largest number, 627, is returned as due to Schistosomiasis (see page 18). Hydrocele cases, considered for the most part to be of filarial origin, number 366 as against 484 in 1929 and 548 in 1928. Nephritis cases number 114 with 12 deaths as against 96 cases with 12 deaths in 1929 and 116 cases with 6 deaths in 1928.

*Puerperal State.*—Of 133 cases in this Group, two terminated fatally from eclampsia. In all, 8 deaths resulting from puerperal conditions were returned from Zanzibar Town.

*Affections of the Skin and Cellular Tissue.*—Next to diseases of the Digestive System this Group contains the largest number of cases. The total number, 28,855, represents nearly 21 per cent of all cases treated during the year, and of these 13,905 were ulcers. In the previous year, the ulcer cases numbered 16,753, the decrease this year being due to a great reduction in tropical ulcers. The opportunity for early treatment afforded by the district dispensaries is being taken advantage of to a great extent and the large disabling ulcers very common a few years ago are now comparatively rare. Elephantiasis, the most important disease in the Group, has shown some reduction in recent years, the number last year being 191, as compared with 221 in 1929, 247 in 1928 and 252 in 1927. Of other serious conditions carbuncle with 19 cases and grangrene with 23 cases also show a decrease from 30 and 46 respectively in the previous year.

*Diseases of Bones and Organs of Locomotion.*—The diseases of this Group numbered 3,136 as compared with 2,473 in the previous year. Diseases of bones show a reduction from 41 to 29 and synovitis from 291 to 208. On the other hand myalgia from 813 to 1,082, lumbago from 506 to 888 and arthritis from 429 to 593 all show a considerable increase. Many of the cases in this Group are sequelæ of other diseases; the increase occurred chiefly in Zanzibar Town and is accounted for by the abnormally heavy rainfall during the early part of the year to which reference has already been made.

*Affections Produced by External Causes.*—The number of cases corresponds very closely with that for the previous year. As against 338 admissions to hospital with 31 deaths in 1929, there were 366 admissions with only 11 deaths during the past year. Of the 11 deaths, four were due to fractures, three to burns and four to other injuries. In the Zanzibar Town returns, four deaths are recorded as due to murder, four to suicide and one to accidental poisoning.

*Ill-defined Diseases.*—These show a decrease from 3,656 to 2,527 as compared with the previous year. Debility, undefined fever, œdema and ascites, for the most part the symptoms, sequelæ or complications of malaria, ankylostomiasis and filariasis, account for most of the cases.

## 2. COMMUNICABLE DISEASES.

### (*a*) *Mosquito or Insect-Borne.*

*Malaria.*—The cases of malaria treated last year numbered 8,993 with 10 deaths as against 8,945 cases with eight deaths in 1929 and 8,252 cases with four deaths in 1928. Of last year's cases, 7,156 occurred in Zanzibar Island and 1837 in Pemba; in the previous year, 6.551 in Zanzibar, 2,394 in Pemba; and in 1928, 5,919 in Zanzibar and 2,333 in Pemba. Three of the deaths last year were due to blackwater as compared with four in 1929 and three in 1928. In Table V only two deaths from blackwater are shown, as one of the fatal cases was not admitted to hospital.

The following table shows the number of cases of Malaria treated at each station or district dispensary during the past three years:—

| Stations. | Cases treated. | | |
|---|---|---|---|
| *Zanzibar Island.* | 1928 | 1929 | 1930 |
| Zanzibar | 2,564 | 2,686 | 3,523 |
| Selem | 247 | 213 | 283 |
| Mkokotoni | 283 | 69 | 68 |
| Mwera | 427 | 356 | 201 |
| Chwaka | 132 | 100 | 45 |
| Mbiji | 110 | 127 | 99 |
| Machui | 230 | 201 | 182 |
| Mahonda | 246 | 148 | 100 |
| Mangapwani | 334 | 165 | 183 |
| Kizimkazi | 120 | 158 | 156 |
| Bweleo | 174 | 192 | 184 |
| Tunguu | 151 | 113 | 128 |
| Walezo | 297 | 578 | 510 |
| Bububu | 197 | 235 | 238 |
| Uzini | 293 | 244 | 162 |
| Chaani | 114 | 42 | 22 |
| Makunduchi | — | 535 | 464 |
| Mkwajuni | — | 355 | 336 |
| Quarantine Station | — | — | 3 |
| Temporary treatment centres | — | 34 | 269 |

*Pemba Island.*

| | | | |
|---|---|---|---|
| Wete | 348 | 403 | 368 |
| Chake Chake | 715 | 716 | 668 |
| Mkoani | 322 | 351 | 251 |
| Kengeja | 193 | 149 | 63 |
| Matangatwani | 139 | 184 | 97 |
| Jambangome | 190 | 223 | 146 |
| Tumbe | 17 | 10 | 3 |
| Fufuni | 63 | 6 | — |
| Tundaua | 34 | 71 | 53 |
| Stambuli | 105 | 132 | 99 |
| Mzambaraoni | 40 | 87 | 54 |
| Ole | 25 | 16 | 9 |
| Kangani | — | — | 26 |
| Road Construction Camps | 142 | 46 | — |
| Total | 8,252 | 8,945 | 8,993 |

From the above table it will be seen that a decrease in the number of cases is returned from all centres in Pemba and from all but Zanzibar Town and four dispensaries in Zanzibar Island. Reference has already been made to the abnormal rainfall in Zanzibar Town during the first quarter of the year and the increased prevalence of malaria among all communities. The monthly incidence of cases in the town was as follows:—January 241, February 234, March 301, April 337, May 515, June 485, July 266, August 236, September 201, October 229, November 213 and December 265.

The number of cases of malaria treated represents 6.53 per cent of all cases treated during the past year. This compares with the five preceding years as follows:—

| 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|
| 6.27 | 5.33 | 6.16 | 6.16 | 6.53 |

But for the increase in Zanzibar Town, the percentage would have been lower than that for either of the two preceding years.

Prior to 1926, the returns showed an excess of sub-tertian over tertian cases, but subsequently the position has been reversed. In the 1929 report, attention was drawn to the fact that in the southern portion of Pemba there still remained an excess of sub-tertian, but last year this district for the first time on record also returned an excess of tertian, and throughout the whole Protectorate, for cases returned with the parasite defined, only 205 were sub-tertian as against 1,365 tertian. Microscopical examinations at the Zanzibar laboratory showed 108 sub-tertian and 487 tertian in 1929 as compared with 84 sub-tertian and 605 tertian last year.

*Blackwater Fever.*—During the year, eight cases of blackwater fever, three ending fatally, were treated by Government Medical Officers. The number of cases, with deaths, treated by Government Medical Officers during each of the past ten years, was as follows:—

| | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|---|---|
| Cases | 5 | 9 | 6 | 4 | 3 | 9 | 3 | 15 | 13 | 8 |
| Deaths | 1 | 1 | 2 | 2 | 1 | 2 | 0 | 3 | 4 | 3 |

In addition to the above, two deaths from blackwater fever were registered by private medical practitioners in 1926, no cases in 1927, one in 1928, one in 1929 and one in 1930.

The following is a summary of the information obtained from the reports on the eight cases treated by Government Medical Officers.

Sex.—Seven males, one female.

Age.—2½, 7, 20, 26, 35 (two attacks), 37, 40.

Race.—British Indian six, Arab one, Chinese one.

Occupation.—Of the five adults, two, a teacher and a motor driver, were Government servants. Of the remainder one was a shopkeeper (two attacks), one a baker, and one (Chinese) was engaged in collecting beche-de-mer.

Locality.—Three contracted the disease in Zanzibar Island and five in Pemba. Of the three Zanzibar patients, one resided in the town, but two had resided for varying periods in the districts. Of the five Pemba patients, three resided in Wete, one in Chake Chake and one in Kengeja.

Period of Residence.—Five had resided in the Protectorate the whole of their lives; one for six months, one for five years and one for six years.

Previous attacks of Malaria.—Numerous in all cases.

Previous attacks of Blackwater Fever.—One had two attacks during the year; one had two previous attacks, one in Tanganyika Territory in 1927 and one in Pemba in 1928.

Seasonal Incidence.—The cases occurred in January, February, April, July, October (2), November and December.

Cause of Attack.—In all cases, as far as could be determined, numerous attacks of malaria inadequately treated.

Cause of Death.—In two of the fatal cases suppression of urine and in one heart failure is recorded.

*Filariasis.*—The 300 cases returned under this heading represent to a very small extent the wide spread nature and serious effects of filarial infection. As primarily due to it, members of the medical staff ascribe not only most or all cases of lymphangitis, lymphadenitis, elephantiasis, hydrocele, varicocele and hernia, but also many cases of rheumatism, myalgia and undefined fever.

Progress is being made from year to year towards the completion of major mosquito-reduction measures within the townships of Zanzibar, Mkokotoni, Chake Chake, Wete and Mkoani. Elsewhere however no major measures have been undertaken. In many localities the geological formation of the Protectorate lends itself to extensive and effective drainage at a comparatively small cost, but careful investigation is necessary to ensure that any measures taken shall not interfere with water supplies essential for irrigation and other purposes. As an example may be cited the Mwera river along the banks of which is the most malarious district of the Protectorate. The river in its present state is sluggish, the channel blocked with vegetation and numerous swamps exist along its course; it finally disappears underground by three small openings. By boring along the course, additional underground channels would probably be found and many swampy areas drained and the river converted into a rapid stream which could be canalized at small cost. Possibly clearing and enlarging the present underground openings would serve the same purpose, but expert opinion is necessary to ascertain to what extent irrigation would be interfered with. Again, in many parts of the Protectorate, by boring to no great depth water is struck which rises and falls with the tide, and investigations would probably show that the construction of sumps is all that is required to drain many mosquito-infected areas. The provision of a District Malaria Survey Unit on the lines laid down by Lieut.-Colonel James is now under consideration. Any drainage measures aiming at mosquito reduction will also be of great value in connection with schistosomiasis, a disease which is yearly assuming greater importance.

### (*b*) *Infectious Diseases.*

The following table shows the number of cases, with deaths, of the more important infectious diseases treated during the past and the previous two years:—

| | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
|---|---|---|---|---|---|---|
| | 1928. | | 1929. | | 1930. | |
| Enteric Group | 6 | 3 | 12 | — | 16 | — |
| Small-pox | 2 | — | 4 | — | 212 | 49 |
| Whooping Cough | 265 | — | 203 | — | 160 | — |
| Influenza | 767 | — | 1,343 | — | 1,590 | — |
| Mumps | 38 | — | 31 | — | 67 | — |
| Dysentery | 225 | 4 | 78 | 1 | 156 | 9 |
| Leprosy | 16 | — | 34 | — | 68 | 2 |
| Chicken-pox | 21 | — | 17 | — | 47 | — |
| Yaws | 6,698 | — | 7,248 | — | 5,451 | — |
| Tetanus | 4 | 3 | 1 | — | 2 | — |
| Tuberculosis | 284 | 39 | 290 | 40 | 237 | 41 |
| Syphilis | 931 | 2 | 1,086 | — | 818 | 4 |
| Soft Chancre | 431 | — | 375 | — | 114 | — |
| Gonorrhœa | 2,660 | — | 2,749 | — | 2,228 | 2 |

*Enteric Group.*—It is unsatisfactory to note an increase in the number of cases in this Group, but no death occurred among the 16 cases treated at Government hospitals. Of the 16 cases, 10 were typhoid and six paratyphoid B. The following table compares the number of cases and deaths with those of the preceding three years:—

| | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
|---|---|---|---|---|---|---|---|---|
| | 1927. | | 1928. | | 1929. | | 1930. | |
| Typhoid Fever | 2 | — | — | — | 4 | — | 10 | — |
| Paratyphoid A | 1 | 1 | — | — | 1 | — | — | — |
| Paratyphoid B | 13 | — | 6 | 3 | 7 | — | 6 | — |
| Type undefined | 1 | — | — | — | — | — | — | — |

Of last year's cases, nine typhoid and five paratyphoid B occurred in Zanzibar Town, one typhoid at Walezo Poor House and one paratyphoid B in Wete, Pemba.

In addition to the cases treated at Government hospitals, six cases of typhoid and one of paratyphoid B with one death were notified by private medical practitioners in Zanzibar Town, also showing an increase on the preceding years:—

| | 1927. | | 1928. | | 1929. | | 1930. | |
|---|---|---|---|---|---|---|---|---|
| | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Typhoid Fever | 2 | 1 | 2 | 1 | 1 | 1 | 6 | — |
| Paratyphoid B | 4 | — | 2 | — | 3 | — | 1 | 1 |

No definite cause for the increase in the number of cases last year was discovered.

*Small-pox.*—During the year an epidemic occurred resulting in 212 cases and 49 deaths. Seven cases were also removed from Bombay steamers and one from a Kutch dhow.

Only 52 cases are shown in Table V, page 71 as treated at hospitals, the remainder being treated at temporary isolation centres. Reference to this epidemic is made on page 6 and in the D.D.S.S.'s report on pages 27 and 29.

*Whooping Cough.*—As compared with the previous year, the cases of whooping cough treated in Zanzibar Island decreased from 142 to 74, but in Pemba increased from 61 to 86.

*Influenza.*—This disease was again of a mild type and although an increased number of cases is returned, no death occurred among the 1590 cases treated and no death was notified by any private medical practitioner.

*Dysentery.*—The returns show a considerable increase in the number of cases treated at Government hospitals and dispensaries last year, 156 cases and nine deaths being recorded as compared with 78 cases and one death in 1929. The increase was largely due to an epidemic which broke out in the Central Prison and resulted in 62 cases and four deaths. Reference to this epidemic is made in the D.D.S.S.'s report on page 29. Of last year's cases 118 occurred in Zanzibar town, 30 in Zanzibar districts and eight in Pemba. Six were returned as amœbic, 61 as bacillary with six deaths, and 89 as undefined with three deaths. All the fatal cases occurred in Zanzibar Town where one death, making 10 in all, was also notified by a private medical practitioner.

*Leprosy.*—Of the 68 cases shown in the returns for last year only 29 were newly discovered, the remainder being for the most part non-infectious patients discharged from the leper settlement subject to their attending periodically at different centres for observation and treatment. Of the 29 new cases, 18 were sent to the settlement and 11, being non-infectious, were allowed to remain in their own homes under supervision.

The annual report of the leper settlement will be found on page 80. (Appendix II).

During the year Dr. R. G. Cochrane, the Secretary of the British Empire Relief Association, visited the Protectorate and furnished the valuable report included in Appendix II page 83. It is hoped that during the coming year it will be possible to give effect to some of the recommendations contained in Dr. Cochrane's report, but the ordinary medical staff is wholly unable to undertake the additional duties entailed by any intensive campaign against the disease, and if, as Dr. Cochrane considers possible, the disease is to be stamped out within a comparatively short period, the services of a special officer must be made available.

*Yaws.*—The cases treated show a reduction of almost 1,800 as compared with the previous year. From Zanzibar Island, 2,745 cases were returned and from Pemba 2,706 as against 4,469 and 2,779 respectively in 1929. The reduction was therefore almost entirely confined to Zanzibar Island where there is considerable evidence that the treatment year by year of a large number of cases is at last bringing the disease to some extent under control.

*Tetanus.*—Two cases with no deaths were returned last year as compared with one case and no death in 1929 and four cases with three deaths in 1928.

*Tuberculosis.*—The number of cases treated last year was 237 with 41 deaths as against 290 cases with 40 deaths in 1929 and 284 cases with 39 deaths in 1928. In Zanzibar Town, the number of deaths notified as due to tuberculosis was 91 which compares with the numbers for the previous nine years as follows:—

| 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|---|
| 105 | 163 | 185 | 167 | 132 | 145 | 138 | 190 | 125 | 91 |

Of 179 cases treated at Government hospitals and dispensaries in Zanzibar Island, 101 were returned from the town as against 143 in the previous year and 78 as against 91 from the districts; of 58 cases in Pemba, 14 were returned from Chake Chake, 38 from Wete, 1 from Mkoani and 5 from the districts as compared with 18, 26, 4, and 8 respectively in the previous year. In spite of the decrease indicated by the above figures, the opinion of both Government Medical Officers and private practitioners is that the disease is increasing in the towns and spreading into the districts. As pointed out in previous reports, the Zanzibar death returns are far from trustworthy, in most cases the cause being determined solely by inspection of the dead body and any information obtainable from friends or relatives.

Reference is made on page 21 to work to be undertaken during the coming year by a Medical Research Council investigator and a tuberculosis specialist, and it is hoped that this will lead to more accurate statistics and that some indication will be obtained as to the most suitable of any preventive and treatment methods practicable.

Pulmonary tuberculosis accounted for 221 of the cases and for 40 of the deaths recorded last year; tuberculosis of other organs for 16 of the cases and one of the deaths.

Special wards for the accommodaion of tuberculosis patients are urgently required. All hospital accommodation available at present is required for acute cases of other diseases, and tuberculosis patients cannot be provided with beds for indefinite periods. They must therefore be returned to their homes where they spread infection and eventually die after varying periods during which they are without proper nursing, medical aid or suitable diet.

*Venereal Disease.*—The total number of cases of all forms of venereal disease treated last year was 3,160 as compared with 4,210 in 1929 and 4,022 in 1928. Few natives escape venereal disease in one or other of its forms and there is no doubt that it is the primary cause of many of the ills and ailments returned under other headings. Gonorrhœa as elsewhere is one of the chief causes of sterility, but venereal disease taken as a whole does not attain the same importance in the Protectorate as it does on the mainland either in its earlier manifestations or after effects. In connection with this, the immunity conferred against syphilis by the greater prevalence of yaws has been discussed in previous reports.

### (c) *Helminthic Diseases.*

The following table shows the number of cases of the more important helminthic diseases treated during the past year as compared with the two previous years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Ankylostomiasis | 16,944 | 14,041 | 14,087 |
| Filariasis | 304 | 331 | 300 |
| Schistosomiasis | 823 | 911 | 627 |
| Ascariasis | 178 | 349 | 397 |

*Ankylostomiasis.*—Exhaustive investigations undertaken during the years 1927 and 1928 showed that practically the whole native population was infected with ankylostomiasis and that the average number of ova per gramme was 3-4,000 for large groups of natives of all ages taken at random throughout the Protectorate. It was also shown that persons with 10,000 or more ova per gramme usually exhibited definite clinical symptoms and that the number of such persons represented slightly more than one in eleven of the total native population. Taking the native population in round figures as 200,000, it therefore follows that at the time of the investigations there were approximately 18,000 natives in the Protectorate suffering from definite symptoms of the disease. Complete lack of any form of sanitation in connection with the great majority of native dwellings renders any results from treatment only temporary; infection and re-infection continue, and in spite of the yearly treatment of many thousands of cases there is little doubt that a further investigation would show little, if any, improvement on the 1927-1928 figures. It must be borne in mind that the harmful effects of the disease are not restricted to the one in eleven of the population showing definite clinical symptoms. None of those infected to even a small degree can be said to be in perfect health, and frequent attacks of malaria from which practically all suffer, filariasis and schistosomiasis, all help to undermine the constitution and furnish an adequate explanation for the characteristics generally accepted as peculiar to the native—lassitude, disinclination or incapacity for work, lack of stamina, premature old age and for the manner in which they easily contract any prevalent disease and often succumb to ailments of minor importance in themselves.

In 1925, proposals aimed at stamping out the disease were put forward, but lack of funds has not enabled these to be carried out to any great extent. District dispensaries of temporary construction, to serve as treatment centres for this and other diseases, have however been established in many localities, Model houses with suitable sanitary arrangements have been erected in the four principal towns, an approved type of latrine has been provided for the houses of headmen in many villages and propaganda has been undertaken in the schools and villages as far as possible with the staff available. It cannot however be said that these measures in themselves will prevent infection and re-infection to any appreciable extent, and at present much time and money is being spent on treatment of little ultimate value. The only certain and satisfactory remedy lies in the provision of public latrines where required and of a suitable type of latrine for each native dwelling. A few public latrines have been provided in the principal towns, but many more are required in the towns and larger villages. With regard to latrines for native dwellings, the cost of the provision for each dwelling as yet without one is estimated at £60,000. There appears to be little prospect of such a large sum becoming available from Government funds. A Townships Decree recently enacted, of which the powers can be extended to the districts, requires the provision of a latrine of an approved type for each newly erected dwelling. As however a native house can be made to last 10 to 15 years by constant repair, years must elapse before any appreciable results can be obtained in this manner, and it is necessary to depend chiefly upon education and propaganda. Education and propaganda however will have little effect unless the Government sets an example and shows an appreciation of the value of the measure advocated by providing public latrines and a latrine for each dwelling on Government property. Any assistance the Government can render the natives either in the way of defraying part of the cost or by making arrangements whereby latrines can be constructed at a cheap rate will also help to attain the object in view.

*Schistosomiasis.*—For the first time on record, last year's returns show a decrease instead of an increase in the number of cases treated.

Several infected pools have been dealt with and warnings have been issued with regard to the dangers of various bathing places. These measures may have had some effect, but new centres of infection are constantly being discovered and until further investigations are possible and funds made available for major measures there will always be the risk of a serious epidemic. Of the 627 cases recorded last year, 365 as compared with 504 in 1929 were returned from Zanzibar Island and 262 as compared with 407 in 1929 from Pemba. Should the proposed Malaria District Survey Unit (page 14) be established much of its work will be of great assistance in dealing with this disease.

*Filariasis.*—Reference to this disease has already been made under "Mosquito and Insect-borne Diseases" on page 13.

*Ascariasis.*—The number of cases of this disease treated during the past year again shows an increase. Only 16 cases were returned from Pemba and of the remainder nearly all were returned from the southernmost part of Zanzibar Island. During the coming year it is proposed to make further investigations with a view to instituting preventive measures.

## (B) VITAL STATISTICS.

### 1. General Native Population.

The last census taken in 1924 showed an African and Arab population in the Protectorate of 202,665. At the same time the number of inhabitants of other races was estimated at 15,300, making a total population of 217,965. Since the census was taken, the returns have shown a considerable excess of deaths over births, but it is thought that any decrease in population due to this cause has been more than counterbalanced by the large excess of immigration over emigration that occurred especially during the years 1923-1926. In Table III on page 66, the population of the Protectorate at the end of 1930 is estimated at 216,801, but there are many possible fallacies in this estimate. The registration of births and deaths is compulsory, but while the number of deaths registered can be accepted as approximately correct there is a general impression that many births, especially in the districts, are left unrecorded. Moreover, the immigration and emigration statistics have in the past been far from reliable and some doubt has also been cast on the accuracy of the 1924 census figures. A new census is to be taken during the coming year and not only Arabs and Africans but all other races are to be included. Every precaution will be taken to obtain correct results and with greater accuracy in the birth, death, immigration and emigration returns, it is hoped that in future years more exact estimates of the population will be possible.

During the past year the total number of births registered throughout the Protectorate was 3,641 and the number of deaths 4,151, which based on the estimated population of 216,801 gives crude birth and death rates per 1,000 of 16.79 and 19.14 respectively. These figures compare with those of the previous four years as follows:—

| | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|
| Births | 3,830 | 4,758 | 4,236 | 4,204 | 3,641 |
| Deaths | 5,017 | 4,128 | 4,302 | 3,893 | 4,151 |
| Birth Rate | 17.65 | 21.98 | 19.34 | 19.31 | 16.79 |
| Death Rate | 23.10 | 19.06 | 19.64 | 17.88 | 19.14 |

Prior to 1927 the returns invariably showed a considerable excess of deaths over births, but after the improvement during the three years 1927-1929, it is disappointing to again find such a large excess as 510. The number of births registered is the lowest since 1923, and the decrease of 563 as compared with the previous year cannot to any great extent be attributed to the incomplete registration to which reference has already been made. It has been suggested that the recent period of poverty with resulting malnutrition may be the primary cause, but the recent excess of emigration due to the improved conditions obtaining on the mainland must also be taken into consideration. Women of mainland origin show much greater fertility than those born of old Protectorate stock, and the departure of many of these who have been residing in the Protectorate for some time. without replacement by new arrivals, cannot but adversely affect the birth rate to a considerable extent.

With regard to the increased death rate, although 258 more deaths were recorded than in the previous year, yet the figures for 1930 show a very definite improvement if compared with the average figures, 4,462 deaths and 21.2 death rate, for the ten years period 1920-1929 inclusive. Of the 258 deaths by which last year's figures exceeded those of the previous year, 197 were returned from Zanzibar Town and only 61 from the remainder of the Protectorate. The latter are largely accounted for by an epidemic of small-pox which resulted in 44 deaths in the districts as compared with no deaths from this disease in 1929.

*Zanzibar Township.*—In the township, the live births during the past year numbered 603 and deaths 1,117, as compared with 591 and 920 respectively during 1929. This is the first year of which there is any record in which the births in the town have exceeded 600, the highest figures previously being 591 in 1929 and 526 in 1928. The increased number of live births in the town during recent years is undoubtedly due to the excellent work performed by the Maternity Home. Of the births last year, 10 were European, 77 Arab, 372 Asiatic (excluding Arab) and 144 African.

As already stated the number of deaths in the town last year exceeded those during 1929 by 197, but the total of 1,117 was considerably less than the average for the previous ten years.

On comparing the causes of death, the increase is seen to be accounted for by a greater number of deaths from malaria (138 as compared with 61 in 1929), ankylostomiasis (131 as compared with

41) and senility (334 as compared with 285). In previous reports it has been pointed out that little reliance can be placed on the causes of death shown in the returns. Only 304 of the 1,117 deaths recorded in Zanzibar Town last year were certified by registered medical practitioners. For the remainder, it was necessary to determine the cause as accurately as possible by viewing the dead body and by any information obtainable from relatives.

Reference has already been made to the increased incidence of malaria in the town last year and to the fact that practically the whole native population is infected with it and with ankylostomiasis Neither of these diseases however is a usual cause of death in itself, and there is no doubt that many of deaths returned as due to malaria, ankylostomiasis and senility, would be more correctly ascribed to a combination of two or more of these conditions in conjunction with an impoverished constitution resulting from an insufficient or unsuitable diet. It is also considered probable that tuberculosis is primarily responsible for more than the 91 deaths recorded.

Of the deaths in the town last year, two were of Europeans, 130 of Arabs, 207 of Asiatics (excluding Arabs) and 778 of Africans, but no accurate birth and death rates can be furnished. The total population of the town is estimated roughly at 40,000, but this figure may be far from accurate and the number of each race is unknown. When the 1924 census was taken the number of Arabs and Africans was approximately 26,500 and based upon this figure, last year's death rate per 1,000 for these two races would be 34.26 and the birth rate 8.34. The town birth rate is increased to some extent by the admission of a certain number of women from the districts into the Maternity Home, but this it is thought, is more than compensated for by the persistence of the old-established custom of women going from the town into the districts for their confinements.

Whatever the exact number of the native population may now be, the vital statistics cannot but be most unsatisfactory and give rise to serious concern. Minor and major anti-malarial measures are carried out as far as the funds made available permit, but much of the expenditure on the former is wasted through insufficient expenditure on the latter. The disastrous consequences in a period of abnormal rainfall arising from neglected drainage are illustrated by the increased case and death rates of the past year in Zanzibar Town.

During the coming year the Medical Research Council will undertake an investigation into the epidemiology of tuberculosis in the Protectorate and the Zanzibar Government has appointed a tuberculosis specialist to investigate and initiate preventive and curative measures. It is also proposed to institute a home treatment service by which some treatment may be provided for natives too ill to attend as out-patients at the dispensaries or for whom no hospital accommodation is available. By these means it is hoped not only to save many lives, but also to obtain more reliable information as to the prevalent diseases and causes of death.

## 2. General European Population.

During the past year 580 cases of illness were treated among Europeans by Government Medical Officers. Of these 265 occurred among officials and 315 among non-officials. In all, 73 European patients were admitted to hospital and among these the death of the wife of an official occurred from pneumonia. The death also of 1 male non-official resulted from a motor car accident making 2 deaths in all among Europeans in the Protectorate during the year. The corresponding figures for the previous year were 588 cases treated (244 officials, 344 non-officials), 41 admissions to hospital and 4 deaths, 2 of the deaths however being of non-residents. The more common or important conditions treated during the past year were malaria 66, undulant fever 1, influenza 40, dengue 1, neuritis 7, neurasthenia 2, lymphangitis 1, bronchitis 10, pneumonia 2, pleurisy 1, asthma 7, tonsillitis 15, pharyngitis 21, duodenal ulcer 1, gastritis 2, dyspepsia 20, ankylostomiasis 1, appendicitis 1, hernia 1, cholecystitis 1, parturition 9, boils 15, abscess 7, osteitis 1, arthritis 4, myalgia 15, ptomaine poisoning 3, injuries 32, debility 10, undefined fever 19.

Ten births occurred during the year.

## 3. European Officials.

No death occurred among European officials during the past year. The cases of illness treated numbered 265 for 25 of which patients were admitted to hospital and for 101 placed off duty, the total number of days off duty amounting to 491. The more important conditions treated were as follows, the numbers for the previous year in certain cases being shown in brackets—malaria 27 (40), influenza 19 (27), undulant fever one (0), neuritis six, neurasthenia one, glaucoma one, bronchitis two, asthma seven, pharyngitis 17, tonsillitis five, duodenal ulcer one, injuries 21, undefined fever eight.

Of the cases of malaria, 18 occurred among officials resident in Zanzibar Island and nine among officials resident in Pemba; in the previous year the corresponding figures were 16 and 24 respectively Much anti-malarial drainage has been carried out in the Pemba towns during recent years, but the decreased incidence of malaria among officials resident in that island is no doubt more especially due last year to the low rainfall experienced.

Medical Boards were held on four European officials during the year. One official was permanently invalided for neurasthenia and one was granted sick leave to enable him to obtain treatment by an eye specialist for glaucoma.

The following table shows the Sick, Invaliding and Death Rates for the whole Protectorate as compared with those for the two previous years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Total number of officials resident | 127 | 125 | 116 |
| Average number resident | 89.96 | 85.45 | 78 |
| Total number on sick list | 104 | 127 | 101 |
| Total number of days on sick list | 524 | 832 | 491 |
| Average daily number on sick list | 1.43 | 2.28 | 1.35 |
| Percentage of sick to average number resident | 1.59 | 2.67 | 1.73 |
| Average number of days on sick list for each patient | 5.04 | 6.55 | 4.86 |
| Average sick time to each resident | 5.82 | 9.74 | 6.30 |
| Total number invalided | 1 | 2 | 1 |
| Percentage of invalidings to total residents | .79 | 1.6 | .86 |
| Total deaths | 1 | 1 | — |
| Percentage of deaths to total residents | .79 | .8 | — |
| Percentage of deaths to average number resident | 1.11 | 1.17 | — |

## 4. NON-EUROPEAN OFFICIALS.

Under this head are included all non-European officials of the 4th and higher grades. One death occurred during the year from pneumonia. The total number of cases of illness treated was 1,073 and for these 628 officials were placed off duty and 63 admitted to hospital. The number of days off duty amounted in all to 3,131 and number of days in hospital to 539.

The more common or important conditions treated were as follows, in certain cases the figures for the previous year being shown in brackets—typhoid fever 0 (2), paratyphoid B 1 (2) malaria 190 (331), blackwater 2 (3) influenza 39 (173), tuberculosis 2 (3), diabetes 6 (1), neurasthenia 3, pneumonia 1 (1), bronchitis 55. asthma 12 (33), tonsillitis 7, pharyngitis 26, myalgia 25, injuries 103, undefined fever 117 (236), debility 14.

Medical Boards were held on 10 non-European officials during the year and five were permanently invalided, the causes of invaliding being pulmonary tuberculosis one, neurasthenia three and cerebral tumour one.

The following table shows the Sick, Invaliding and Death Rates for the past and two previous years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Total number of officials resident | 552 | 567 | 564 |
| Average number resident | 458.95 | 467.83 | 488.18 |
| Total number on sick list | 446 | 793 | 628 |
| Total number of days on sick list | 2,959 | 3,430 | 3,131 |
| Average daily number on sick list | 8.08 | 9.40 | 8.57 |
| Percentage of sick to average number resident | 1.76 | 2.00 | 1.75 |
| Average number of days on sick list for each patient | 5.63 | 4.33 | 4.98 |
| Average sick time to each resident | 6.45 | 7.33 | 6.21 |
| Total number invalided | 10 | 9 | 5 |
| Percentage of invalidings to total residents | 1.81 | 1.59 | .88 |
| Total deaths | 2 | 2 | 1 |
| Percentage of deaths to total residents | 0.36 | 0.35 | 0.18 |
| Percentage of deaths to average number resident | 0.43 | 0.43 | 0.25 |

## 5. POLICE FORCE AND PRISON STAFF.

The total strength of non-commissioned officers and men of the Police Force and Prison Staff for the past year was 710 and the average strength 671. The following is a summary of the more important returns from the different towns and districts:—

| | Zanzibar Town | Zanzibar District | Chake Chake Town and District | Wete Town and District | Mkoani Town and District | Total |
|---|---|---|---|---|---|---|
| Average strength ... | 471 | 75 | 47 | 45 | 33 | 671 |
| Number treated ... | 2506 | 406 | 282 | 258 | 171 | 3623 |
| Number placed off duty ... | 351 | 76 | 114 | 70 | 34 | 645 |
| Number of days off duty ... | 3373 | 252 | 511 | 238 | 71 | 4445 |
| Average number off duty ... | 9.21 | 0.70 | 1.40 | 0.65 | 0.19 | 12.15 |
| Number admitted to hospital ... | 172 | 1 | 18 | 21 | 6 | 218 |
| Number of days in hospital ... | 1893 | 3 | 193 | 170 | 29 | 2288 |
| Average number in hospital ... | 5.19 | ... | 0.53 | 0.47 | 0.08 | 6.27 |
| Invalided .. | 18 | ... | ... | ... | ... | 18 |
| Deaths ... | 3 | ... | ... | ... | ... | 3 |

The Zanzibar returns are adversely affected by the transfer when practicable of serious cases of illness to headquarters.

The causes of death and invaliding were as follows:—

Death.—Locomotor ataxia, cerebral malaria, acute nephritis.

Invaliding.—General debility 3, pulmonary tuberculosis 5, optic atrophy 1, sympathetic opthalmia 1, defective vision 1, asthma 2, locomotor ataxia 1, adenitis 1, beri-beri 1, avitaminosis 1, continued fever 1.

In 1929 there were five deaths and sixteen invalidings; in 1928 four deaths and nine invalidings.

The more common or important illnesses treated during the past year were malaria 328, dysentery 12, yaws 57, filariasis 13, lymphadenitis 33, bronchial catarrh and bronchitis 441, pneumonia eight, asthma 17, pharyngitis and tonsillitis 107, ankylostomiasis 83, injuries 452.

# III. HYGIENE AND SANITATION.

## Report by the Deputy Director of Sanitary Services.

## (A) GENERAL REVIEW OF WORK DONE AND PROGRESS MADE.

The personnel of the Public Health Service was added to in 1930 by the transfer of Dr. H. G. Wiltshire from Nyasaland. Dr. Wiltshire took up duty in Zanzibar in October. From May until December the Deputy Director of Sanitary Services acted as Director of Medical and Sanitary Services while the Health Officer was appointed to act as Deputy Director. The Sanitary Superintendent was on leave from July until the end of the year and his duties were performed by the European Sanitary Inspector, Pemba.

An outbreak of small-pox in the town early in the year and subsequent localized outbreaks in the outlying districts required considerable attention during the greater part of the year and routine work was consequently interfered with.

The Sanitation of Pemba was under the supervision of the Medical Officers, a European Sanitary Inspector, two Asiatic Sanitary Inspectors and three Junior Inspectors.

The work done during the year is shown in detail under the appropriate headings in the following pages.

### 1. PREVENTIVE MEASURES.

### (*a*) Mosquito and Insect-borne Diseases.

*Zanzibar.*—Mosquito control was more difficult than usual in 1930 owing to the exceptionally heavy and prolonged rainfall in the first half of the year. The Recreation Park was the chief source of trouble and is now more difficult to deal with owing to the filling which was done in 1929. It was hoped that this filling of the most depressed part would prevent the accumulation of water there, but the water which used to form a deep pool in one corner if the Park now forms a shallow lake all over it and the facilities for mosquito breeding have been increased. In December a drain was constructed which takes most of the surface water from the Park to the Creek Basin and this ought to help matters considerably as it will leave less water to be removed by pumping and evaporation; but the problem will not have been satisfactorily dealt with until a subsoil system discharged by pumping into the creek or by gravitation across the golf course to the sea, is established: a drain across the golf course would drain that course as well, and if the levels allow of it this would be the ideal way of tackling the problem.

Culex fatigans continues to be the most commonly found mosquito in the town and the larvæ most frequently captured are stegomyia.

During the year over four thousand gallons of oil were used in anti-larval measures.

TABLE No. 1.

Comparaive table showing collections of mosquito larvæ found in the township.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Anopheline ... | 67 | 13 | 75 |
| Culex ... | 287 | 279 | 427 |
| Stegomyia ... | 2,090 | 3,197 | 4,205 |

TABLE No. 2.

The following adult mosquitos were caught in the township.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Anopheline ... | 372 | 232 | 159 |
| Culex ... | 4,458 | 4,399 | 4,293 |
| Stegomyia ... | ·382 | 327 | 98 |

TABLE No. 3.

Sullage and Cesspits oiled fortnightly during 1930.

| | | | |
|---|---|---|---|
| January | 2,343 | July | 2,236 |
| February | 2,097 | August | 2,299 |
| March | 2,279 | September | 2,632 |
| April | 2,014 | October | 2.456 |
| May | 2,961 | November | 2,632 |
| June | 2,847 | December | 2,401 |
| | | Total | 29,207 |

TABLE No. 4.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Number of notices served ... | 968 | 688 | 827 |
| Number of prosecutions instituted ... | 13 | 5 | 0 |
| Number of convictions obtained ... | 13 | 4 | 0 |

*Wète.*—Of the six swamps reported on last year, the following have been properly graded and drained:—

1. Market swamp.
2. Customs swamp.

*Chake Chake.*—The Chachani concrete open drain keeps this area very dry and free from mosquito-breeding areas. Some 80 yards of it were repaired during the year.

The earth drain running from Miembeni to Kichungani creek continues to remain a perpetual breeding place for mosquitos, especially *Anopheles costalis* and Culex of several species; in spite of constant attention and regular oiling. The construction of a proper concrete drain is being undertaken.

The earth drains and ditches round the new recreation ground and Mtenga Swamp are permanent breeding places and are regularly oiled. This area has improved considerably since grading and filling has been carried out by our staff.

Mosquito nuisances found numbered 140 as compared with 257 in 1929. The decrease is due largely to shortage of rain and increased care in supervision of these areas by our staff.

*Mkoani.*--The swamp to the South of the township is mostly free from mosquitos due to the proper functioning of the drainage scheme completed this year.

The swamp to the North of the township was regularly visited and oiled. This is an extensive marshy area which does not react well to oiling. It has been arranged to drain this area in 1931.

All concrete rain water tanks at the Government Quarters, Police Lines and School have been found free from mosquitos since they have been rendered mosquito proof.

Mosquito nuisances found during the year:—27.

## (*b*) Epidemic Diseases.

*Zanzibar Town and Island.—Small-pox.*—Five cases of small-pox were discovered on March 11th amongst a community of Baluchis living at Saateni, a village on the outskirts of the town, being reported in the first place to the Senior Native attendant at the Infectious Diseases Hospital, who immediately recognised the disease and brought the cases to the notice of the Heatlh Officer. The origin of the infection is uncertain, but small-pox was rife in the Bombay Presidency at the time. The passengers of no less than three ships from Bombay were in quarantine at the Quarantine Station, and there were nine cases and their contacts off these ships isolated at the Infectious Diseases Hospital, and the probability is that the infection came from this hospital which is situated between the town and the village in question, being conveyed either by air or by the Baluchi Community having illegal dealings with the cases isolated there. Cases and contacts were immediately isolated and an extensive vaccination campaign begun throughout the two Islands. Four more cases were removed from this area in the next few days. As the area was within the limit of the town boundaries it was necessary to declare the port infected. The last case occurred on April 5th and no further case arising, the port was declared free from infection on April 19th and fortunately it remained free to end of the year.

Isolated cases scattered throughout the Island continued to crop up at intervals during the next few months, the last case occurring at Mangapwani in November. The infection was probably carried by itinerant hawkers and beggars wandering along the roads. Two cases occurred respectively in a Somali and a Swahili who had been hawking dried fish along the roads, the former when admitted to hospital was quite unable to state where he had been or what village he had visited. Fortunately owing, presumably, to extensive vaccination and prompt isolation of the cases, only one or two cases occurred in the infected villages, but Bweju and Paje, two villages on the East Coast of the Island, proved an unfortunate exception. These villages are extremely inaccessible and have little communication with the more populous parts of the Island. Presumably the infection was introduced by dhows and the people unprotected either by previous out-breaks or vaccination suffered heavily. On receiving news of the out-break the Acting Deputy Director of Sanitary Services and District Officer, Southern Districts immediately visited the District. Under their direction a temporary hospital was built and put in charge of the Senior Native Attendant of the Infectious Diseases Hospital assisted by a Vaccinator and two native sick attendants. Arrangements were made also to despatch supplies of food to the two villages, as the villagers, being chiefly fishermen, were dependent on two Indian traders for their rice supplies. These incontinently fled on the out-break of the epidemic. The total number of cases in these villages was 85, of a total population of 1,500, with 28 deaths, the first case occurring on August 5th and the last on November 1st.

*Chicken-pox.*—Was not prevalent during the year.

*Plague.*—There have been no cases of this disease in the Protectorate since 1911. Spleen smears from rats caught in town are examined daily. Particulars relating to rats destroyed will be found under Reduction of Vermin Sub-Section 7.

*Tuberculosis.*—Throughout the whole Protectorate 237 cases were treated during the year. In Zanzibar town 91 deaths and 111 cases were notified. This disease will be the subject of an investigation by a research worker appointed by the Medical Research Council, and by a tuberculosis officer appointed by the Government in the forthcoming year.

*Enteric Fever and Dysentery.*—There was a considerable increase in the number of cases of both enteric fever and dysentery in the year under review. The enteric cases numbered 23 with one death. Of these six were due to para B infection. Whilst it is difficult to state reasons for the increase it is satisfactory to be able to say that it was definitely ascertained that in no case was the infection conveyed either by milk or by the town water supply. In one group of five cases occurring in the town, a definite carrier was found, who may possibly have been the source of infection, and the matter is still under investigation.

The increase in the number of dysentery cases was largely due to an epidemic of bacillary dysentery in the Central Jail, sixty-two cases with four deaths occurring there during the year. The disease was undoubtedly fly borne, and intensified and kept alive by the bucket system of night soil disposal in use. A special latrine is required for the hospital ward in order that infected stools should not be mixed with healthy stools. This latrine was under construction at the end of year. Fly proofing of all latrines is necessary to check continual infection, but the most effective method of checking dysentery and preventing its recurrence in the installation of a water flushed sewage system.

*Leprosy.*—Particulars will be found in the Report for the Leper Settlement printed as Appendix II.

*Wete.—Small-pox.*—An epidemic broke out in June and the last case occurred in August. In all there were 83 cases and 13 deaths. All the cases occurred on the East side of the Island and along the Pandani—Finya—Wingwi-pwana road, and no cases were found West of the Matangatwani—Wete—Chake Chake road. During the period of the epidemic and two months afterwards 37,044 persons were vaccinated.

*Chake Chake.—Small-pox.*—A small localised outbreak of small-pox occurred in June, the first case occurring on 13th June, 1930. The epidemic lasted for about two months. In all there were 14 cases with one death. The outbreak was controlled by the erection of a temporary "Makuti" isolation camp in the district concerned; here all cases and contacts were isolated until free from infection.

Vaccinations numbered 20,346 as compared with 779 in 1929.

A rigid examination of all crews and passengers proceeding to and from Zanzibar by dhows and Government steamers, was maintained, and all those showing no evidence of recent vaccination were immediately vaccinated.

*Tuberculosis.*—All cases notified are investigated by the Health Department who keeps a record of the previous and subsequent history of each case. Eight cases were notified during the year.

*Leprosy.*—Three new cases were sent to Funzi Leper Settlement during the year. Fifteen cases remain under supervision and treatment. These include four very early cases which are responding well to Alepol injections.

The following cases are under supervision at Chake Chake:—

| | |
|---|---|
| Observed Lepers | 7 |
| Suspected Lepers | 2 |
| Reputed Leper | 1 |
| Paroled Lepers | 5 |

Injections were given as follows:—

| | |
|---|---|
| Alepol | 15 |
| Hydnocreol | 16 |

*Mkoani.—Small-pox.*—The Mkoani District remained free from small-pox during the epidemic of June and July:—

| | |
|---|---|
| Number of vaccinations | 4,196 |

*Tuberculosis.*—Three cases were notified during the year.

*Leprosy.*—One new case was reported and notified during the year.

The following are under observation:—

| | |
|---|---|
| Observed Lepers | — |
| Reputed Lepers | 1 |
| Paroled Lepers | 6 |
| Segregated Lepers | 1 |

## VACCINATION RETURN FOR 1930.

| Months | Town | Steamers | Dhows | Quarantine | Mkokotoni and District | Chwaka | Mwera | Wete | Chake-Chake | Mkoani | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|
| January ... ... | 41 | 141 | 851 | 492 | ... | ... | ... | 118 | 110 | 172 | 1,925 |
| February ... ... | 93 | 214 | 1,149 | ... | ... | ... | ... | 160 | 59 | 88 | 1,763 |
| March ... ... | 5,317 | 356 | 725 | 793 | 2,975 | 506 | 296 | 246 | 1,113 | 327 | 12,654 |
| April ... ... | 2,154 | 88 | 4 | ... | 7,627 | 3,030 | 293 | 542 | 1,315 | 1,219 | 16,272 |
| May ... ... | 597 | 32 | 103 | ... | 619 | 1,481 | 35 | 247 | 1,121 | 982 | 5,217 |
| June ... ... | 586 | 143 | 219 | ... | 711 | 166 | ... | 6,054 | 6,601 | 352 | 14,832 |
| July ... ... | 502 | 57 | 72 | ... | 706 | ... | ... | 18,937 | 6,476 | 467 | 27,217 |
| August ... ... | 780 | 25 | 67 | ... | 395 | 1,171 | ... | 7,096 | 2,981 | 215 | 12,730 |
| September ... ... | 416 | 26 | 43 | ... | 1,944 | 130 | ... | 2,459 | 489 | 211 | 5,718 |
| October ... ... | 296 | 32 | 46 | ... | 54 | 1,022 | ... | 1,061 | 34 | 22 | 2,567 |
| November ... ... | 340 | 52 | 20 | ... | 1,146 | 72 | ... | 96 | 30 | 76 | 1,832 |
| December ... ... | 481 | 41 | 83 | ... | 265 | ... | ... | 28 | 17 | 65 | 980 |
| Total ... | 11,603 | 1,207 | 3,382 | 1,285 | 16,442 | 7,578 | 624 | 37,044 | 20,346 | 4,196 | 103,707 |

### (c) Helminthic Diseases.

*Zanzibar.—Ankylostomiasis.*—This disease is universal throughout the Protectorate: its prevalence can only be reduced by educational propaganda as to the cause of the disease and the methods whereby infection may be avoided. This is naturally a slow process, but the extensive treatment of the populace by means of the District Dispensaries is undoubtedly reducing the incidence, though re-infection speedily occurs. Under the Towns Decree of 1929, all houses newly built are required to be provided with a latrine. As these are constructed in increasing numbers and the natives become habituated to their use so will the incidence of the disease diminish.

*Schistosomiasis.*—Occurs in both Islands, chiefly among children, who evidently acquire the infection from bathing in swamps and pools. The only infecting agent appears to be S. hæmatobium. The disease tends to spontaneous recovery during the course of years.

*Filariasis.*—Is widely spread throughout the Protectorate, with resulting sequelæ of various forms of elephantiasis, hydrocele funiculitis, etc. It appears somewhat commoner in urban areas than rural districts probably on account of the large number of cesspools in which culicines breed. Such breeding is however greatly diminished by regular oiling of these cesspools, over thirty thousand oilings being done yearly.

*Wete.—Akylostomiasis.*—Of 184 persons examined during the last half of the year for ankylostomiasis, 57 per cent were positive.

## 2. GENERAL MEASURES OF SANITATION.

### (*a*) Sewage Disposal and Drainage.

*Zanzibar.*—The canal basin at the South end of the creek was completed early in the year. Schemes are now under consideration to prevent the basin from becoming silted up and to obtain a rapid removal of the sewage which is at present distributed over the bed of the creek during the periods of neap tides.

The drainage scheme at the Government dairy Mji Mpia was completed during the year, the effluent from the septic tank being discharged into the old town quarry. This method of disposal rapidly created a nuisance as a considerable quantity of manure passes through the tank. An experiment is being tried to dispose of the effluent by conducting it into a fissure in the bed of the quarry and this may prove to be the solution of what has become a difficult sewage problem.

## *Public Latrines.*

| For Males. | | | | | | For Females. | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| No. of Latrines | | | No. of Seats. | | | No. of Latrines | | | No. of Seats. | | |
| 1928 | 1929 | 1930 | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 |
| 4 | 6 | 6 | 18 | 23 | 23 | 3 | 3 | 3 | 8 | 8 | 8 |

## *Cesspools and Cesspits.*

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| No. of cesspools and cesspits (approximately) .. | 6,107 | 6,112 | 6,102 |
| No. of cesspools and cesspits constructed .. | 22 | 17 | 27 |
| No of cesspools and cesspits abolished .. | 29 | 12 | 37 |
| No. of cesspools and cesspits cleaned .. | 460 | 397 | 538 |

## *Drains.*

| | Public. | | | Private. | | |
|---|---|---|---|---|---|---|
| | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 |
| *Masonry drains—* | | | | | | |
| Linear yards .. | 13,952 | 14,252 | 15,670 | .. | .. | .. |
| Linear yards constructed .. | 300 | 813 | 1,318 | 1,883 | 683 | 714 |
| Linear yards repaired .. | 266 | 266 | 350 | 220 | 370 | 310 |
| *Storm water earth drains—* | | | | | | |
| Linear yards cleaned and graded .. | 371,625 | 371,625 | 14,380 | 888 | 888 | 888 |

*Chake Chake.*—Under the "Towns Decree, 1929" all drainage nuisances are reported to the Drainage Authority for abatement. In all 30 such nuisances were dealt with. All new drainage work is constructed with glazed earthenware pipes, trapped gullies, etc., which may be purchased locally from the Public Works Department.

There is one public latrine behind the market. The second section of this latrine has been re opened and is proving satisfactory. Two more public latrines are required, one at Miembeni and one at Chachani. Several new private latrines have been constructed all with concrete tops and according to standard specifications.

### (b) REFUSE DISPOSAL AND SCAVENGING.

*Zanzibar.*—The majority of the refuse has been dumped in the old quarry. Several large depressions in the native village have been successfully levelled with refuse.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Men employed to remove refuse ... | 191 | 191 | 195 |
| Carts at work daily ... | 54 | 54 | 50 |
| Loads of refuse removed (daily average) ... | 268 | 280 | 267 |
| ,, ,, ,, burnt (daily average) ... | 159 | 6 | 7 |
| ,, ,, ,, buried (daily average) ... | 109 | 274 | 260 |
| Loads of dust and incombustible material (daily average) ... | 38 | 9 | 6 |
| Dustbins provided by private house holders ... | 540 | 375 | 490 |

*Wete.*—

| | |
|---|---|
| Cart loads of refuse burnt ... | 2,026 |
| Cart loads of refuse buried ... | 2,099 |
| Buckets of night soil removed ... | 4,937 |

*Chake Chake.*—All refuse is deposited in numerous public and private dustbins distributed throughout the township. These are collected by sanitary carts and conveyed to the refuse dump. As much as the incinerator can deal with is burnt, the remainder being dumped near by along the border of the creek and covered with earth. This dump is working very well and quite a considerable area of useful land is being reclaimed.

An attempt is being made to get all occupiers to provide a dustbin of their own of a standard pattern with a well fitting lid. The great difficulty lies in getting and adequate supply of standard bins.

The number of cart loads of refuse dealt with shows a further increase:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Loads burnt | 3,177 | 4,008 | 4,012 |
| Loads buried | — | — | 1,029 |

*Mkoani.*—As much material as possible was burnt by the incinerator, the remainder was dumped close by and covered with earth. Owing to the proximity of new clerks' quarters the incinerator will now have to be moved. A new site has been chosen and approved and it is hoped that work will commence there early in the new year.

During the year 4,484 cart loads of refuse were removed.

## (*c*) WATER SUPPLY.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| PIPE-BORNE WATER :— | | | |
| Source Springs | | | |
| Number of linear yards | 51,120 | 57,152 | 58,727 |
| Number of standpipes along roads | 78 | 87 | 86 |
| Number of standpipes in compounds and houses | 473 | 487 | 497 |
| WELLS :— | | | |
| Public— | | | |
| Number | 6 | 6 | 6 |
| Number of pumps protected against surface water and mosquito protected | — | — | — |
| Private— | | | |
| Number | 82 | 82 | 82 |
| No. with pumps protected against surface water and mosquito protected | 8 | 8 | 9 |
| TANKS :— | | | |
| Public— | | | |
| Number underground | — | — | — |
| Number mosquito protected and served by pumps | — | — | — |
| Number above ground | 2 | 2 | 2 |
| Number mosquito protected | 2 | 2 | 2 |
| Number of 400 gallons capacity or less | — | — | — |
| Number above 400 gallons | 2 | 2 | 2 |
| Private— | | | |
| Number underground | 5 | 5 | 9 |
| Number mosquito protected | 5 | 5 | 7 |
| Number of 400 gallons capacity | 408 | 408 | 408 |
| Number mosquito protected | 160 | 160 | 160 |
| Number of 400 gallons capacity or less | 352 | 352 | 352 |
| Number above 400 gallons | 61 | 61 | 65 |
| Nature of Tanks— | | | |
| Wood | — | — | — |
| Iron | 156 | 156 | 160 |
| Concrete | 257 | 257 | 257 |
| BARRELS :— | | | |
| Number | 2,897 | 2,897 | 2,897 |
| Number mosquito protected | 1,169 | 1,169 | 1,169 |
| Number unprotected | 1,728 | 1,728 | 1,728 |

*Chake Chake.*—No alteration in source. At times the water drawn from the supply pipes is very turbid, contains algæ, and on standing shows a sediment of sand. The creek running within 20 yards of the supply tank is a potential source of pollution as the walls of the tank are of clay in the lower half and the creek bed is at a much higher level than the bottom of the reservoir. Attention to this would diminish risk of extensive pollution.

*Mkoani.*—The present supply comes from the rain-water tanks and shallow wells. A bore has been made to the north-east of the Township which is capable of producing about 12,000 gallons per day; and should water prove to be potable on analysis a considerable improvement will be effected in the quality and quantity of the general water supply.

## (*d*) OFFENSIVE TRADES.

No change.

### (e) CLEARANCE OF BUSH AND UNDERGROWTH.

*Zanzibar.*—During the year the Sanitation Division cut down and removed 262,403 square yards of bush and undergrowth within the Township boundaries. In addition all owners of unoccupied land were served with notices calling upon them to clear their plots.

*Chake Chake.*—During the year 189,625 square yards of bush and grass were cleared.

*Mkoani.*—During the year 38,635 square yards of bush, grass and undergrowth were cleared.

### (f) SANITARY INSPECTIONS.

The following table summarises the routine work of the inspectors.

*Zanzibar.*—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| No. of Sanitary Inspectors employed ... | 6 | 6 | 6 |
| No. of Junior Sanitary Inspectors employed ... | 9 | 6 | 5 |
| No. of visits to dwelling houses ... | 511,678 | 494,726 | 464,500 |
| No. of visits to hotels and bars ... | 828 | 277 | 244 |
| No. of visits to eating houses ... | 4,715 | 5,532 | 5,361 |
| No. of visits to lodging houses ... | 3,722 | 4,424 | 4,590 |
| No. of visits to aerated water factories ... | 532 | 300 | 370 |
| No. of visits to bakeries ... | 445 | 473 | 541 |
| No. of visits to food stalls ... | 3,577 | 3,550 | 4,438 |
| No. of visits to cowsheds and dairies ... | 991 | 2,977 | 2,957 |
| No. of visits to godowns and garages ... | 9,949 | 5,864 | 5,525 |
| No. of visits to markets ... | 1,564 | 1,472 | 1,461 |
| No. of boats and dhows inspected for mosquitos ... | 6,113 | 7,030 | 8,036 |
| No. of notices served to remove insanitary conditions ... | 3,037 | 2,203 | 2,427 |
| No. of notices not complied with at the end of the year ... | 26 | 15 | 47 |
| No. of nuisances abated ... | 5,001 | 5,944 | 6,956 |
| No. of convictions for not removing insanitary conditions ... | 31 | 50 | 28 |
| No. of houses cleaned and disinfected ... | 5 | 16 | 67 |
| No. of drains, tanks and barrels oiled ... | 7,931 | 4,124 | 4,847 |
| No. of cesspools emptied ... | 334 | 324 | 473 |
| No. of cesspools covered with cement concrete covers ... | 130 | 44 | 36 |
| No. of ruins cleaned out ... | 82 | 97 | 84 |
| No. of huts demolished ... | 16 | 8 | 37 |
| No. of paupers removed ... | 103 | 48 | 43 |
| No. of paupers buried ... | 48 | 33 | ~~526~~ 52 |
| No. of lepers sent to Pemba ... | 5 | 2 | 4 |
| No. of cases of infectious diseases removed to Isolation Hospital ... | 6 | 14 | 41 |

*Chake Chake.*—

*Sanitary Inspectors.*

| | |
|---|---|
| No. of inspections of premises ... | 40,758 |
| No. of general nuisances found ... | 58 |
| No. of mosquito nuisances found ... | 140 |
| No. of cesspools oiled weekly ... | 48 |
| No. of cesspits oiled weekly ... | 47 |
| No. of tanks oiled weekly ... | 3 |
| *Prosecutions.* | |
| General ... | 3 |
| Mosquito ... | 3 |

*Mkoani.*—

| | |
|---|---|
| No. of inspections of premises ... | 5,803 |
| No. of general nuisances found ... | 13 |
| No. of mosquito nuisances found ... | 27 |
| No. of cesspools oiled weekly ... | 6 |

## 3. SCHOOL HYGIENE.

*Zanzibar Island.*—As in former years the work done at the School Clinic comprised the routine examination of school children in the town, with the subsequent treatment of those found to require it, together with daily treatment of all boys reporting sick. As in 1929 this work was interfered with in the early part of year by the arrival of a succession of ships from Bombay, whose deck passengers had to be quarantined on account of small-pox, and the Health Officer and Sub-Assistant Surgeon had little time available for work in the clinic. The small-pox outbreaks in Zanzibar itself for the greater part of the year also claimed a good deal of attention which would normally have been devoted to the clinic. Nevertheless all school boys in Zanzibar Town who had not undergone routine examination in 1929 were examined and appropriate treatment given or recommended where necessary. The daily sick parade from the schools was also attended to continuously throughout the year there being 2,415 new attendances and 5,410 repetition attendances with an average daily attendance of 21.

The prevalent diseases were minor injuries (bruise, cut, sprain, etc.) constipation, dental carries, coryza.

Boys from the Bohora School were examined for the first time in 1930. The total number of boys examined from the different schools being as follows:—

| | | |
|---|---|---|
| 1. | Government Central School ... | 104 |
| 2. | Shia Imami Ismailia School ... | 229 |
| 3. | Mwembeladu School ... | 47 |
| 4. | Bohora School ... | 183 |
| | | 563 |

The percentage of boys in the different schools showing defects are shown in the following table.

| Defects. | | Govt. Central School Tot. Ex. 104. Per Cent. | Mwembeladu School Tot. Ex. 47. Per Cent. | Aga Khan School Tot. Ex. 229. Per Ctnt. | Bohora School Tot. Ex. 183. Per Cent. |
|---|---|---|---|---|---|
| Nutrition | | ... 3 | — | 9 | 11 |
| Cleanliness | Skin | ... 17 | 24 | 14 | 5 |
| | Head | ... 50 | 87 | 79 | 34 |
| | Body | ... 25 | 76 | 44 | 13 |
| Vaccination Requirel | | ... 10 | 16 | 9 | 3 |
| Defective Teeth | | ... 57 | 57 | 80 | 62 |
| Nose and Throat | | ... 5 | 3 | 5 | 1½ |
| Tonsils | | ... 34 | 35 | 59 | 38 |
| Adenoids | | ... — | — | — | — |
| External Eye Disaase | | ... 3 | 6 | 4 | 1½ |
| Defective Vision | | ... 2 | 11 | 32 | 54 |
| Ear Diseases | | ... 2 | — | 5 | 2 |
| Hearing | | ... — | — | — | — |
| Speech | | ... — | — | — | — |
| Mental Condition | | ... 11 | — | 2 | — |
| Heart and Circulation | | ... — | 32 | 9 | 13 |
| Lungs | | ... — | — | — | — |
| Nervous System | | ... — | — | — | — |
| Rickets | | ... — | — | 2 | 1½ |
| Deformities | | ... 2 | 3 | 3 | 3 |
| Lymphatic Glands | | ... 29 | 81 | 40 | 34 |
| Spleen | | ... 45 | 68 | 49 | 32 |
| Other Diseases | | ... 10 | 14 | 5 | 7 |
| Parasitis M.P. | | ... 21 | 43 | 8 | 8 |
| Wax Ear | | ... 29 | 40 | 60 | 58 |
| A. D. | | ... 6 | — | — | — |

The following table gives the percentages of defects found on routine examination of the pupils of three district schools in Zanzibar Island:—

| Defects. | | Ndijani School Tot. Ex. 76. Per Cent. | Mwera School Tot. Ex. 104. Per Cent. | Donge School Tot. Ex. 36. Per Cent. |
|---|---|---|---|---|
| Nutrition | | 3 | 1 | 3 |
| Cleanliness | Skin | — | 18 | — |
| | Head | — | 6 | — |
| | Body | 1 | 5 | — |
| Vaccination required | | 7 | 14 | 42 |
| Defective Teeth | | 20 | 50 | 50 |
| Nose and Throat | | 1 | — | 8 |
| Tonsils | | 4 | 17 | 14 |
| Adenoids | | — | — | 5 |
| External Eye Disease | | — | 2 | — |
| Defective Vision | | — | — | — |
| Ear Disease | | — | — | — |
| Hearing | | — | — | — |
| Speech | | — | — | — |
| Mental Condition | | 5 | 6 | 5 |
| Heart and Circulation | | 1 | 1 | 17 |
| Lungs | | 1 | 1 | 3 |
| Nervous System | | — | — | — |
| Rickets | | 3 | — | 11 |
| Deformities | | 3 | 1 | 3 |
| Lymphatic Glands | | — | 2 | 3 |
| Spleen | | 44 | 54 | 25 |
| Other Diseases | | 20 | 14 | 5 |
| Parasitis M.P. | | 3 | 40 | 25 |
| Ankylostomiasis | | 67 | 71 | 100 |
| Ascaris | | 61 | 18 | 26 |
| Trichuris | | 27 | 22 | 42 |

The following table gives the percentages of defects found on routine examination of the pupils of three district schools in Pemba Island:—

| Defects. | Chake Chake Tot. Ex. 92. Per Cent. | Wete School Tot. Ex. 48. Per Cent. | Matangatwani Tot. Ex. 30. Per Cent. |
|---|---|---|---|
| Nutrition | 8 | 8 | 13 |
| Cleanliness | 33 | 25 | 37 |
| Defective Teeth | 21 | 38 | 53 |
| Nose and Throat | 30 | — | — |
| Tonsils | 24 | 33 | 17 |
| Ear Diseases | 1 | — | — |
| Mental Condition | 6 | — | — |
| Lymphatic Glands | 2 | — | — |
| Spleen | 47 | 67 | 67 |
| Other Diseases | 7 | — | — |
| Parasites M.P. | — | 42 | 37 |
| Ankylostomiasis | — | 42 | 57 |
| Ascaris | — | — | 10 |

## 4. LABOUR CONDITIONS.

The conditions remain as stated in previous annual reports.

## 5. HOUSING AND TOWN PLANNING.

*Zanzibar.*—Further progress has been made under the town planning scheme. A new road was constructed through a very congested Bazaar area and will greatly improve the ventilation and scavenging facilities.

In the course of the year sixteen stone houses and thirty-seven native huts were demolished. The majority of the premises were acquirements in connection with town planning schemes.

A new house inspection report form has been introduced for the purpose of recording full particulars of each building including type, occupiers, number and area of rooms, general sanitary conditions, water supply and drainage, vermin present, etc. The District Sanitary Inspectors are using this form in compiling a complete sanitary survey of the premises in the township. Owing to other numerous routine duties this will take a considerable time to complete, but on completion more reliable statistics will be possible regarding the general sanitation and housing within the township. The system is gradually being extended to the Pemba townships as circumstances permit.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Total number of houses Zanzibar Town ... | 3,351 | 3,348 | 3,332 |
| Number occupied by Europeans ... | 135 | 135 | 130 |
| Number occupied by Natives and Asiatics ... | 3,216 | 3,213 | 3,197 |
| Number of huts ... | 8,200 | 8,478 | 8,450 |

*Wete.*—All building permits were examined and reported on by the Health Officer.

*Chake Chake.*—During the year 388 building applications were referred to the Public Health Division for inspection and sanitary recommendations. Owing to the congested condition of parts of the township a proper town planning scheme is urgently required. A survey plan showing all the buildings and native huts is also very necessary. Until this is completed no definite sanitary areas or the numbering of premises can be carried out.

*Mokani.*—Building applications numbering 85 were referred to the Public Health Division for inspection and sanitary recommendations.

## 6. FOOD IN RELATION TO HEALTH AND DISEASE.

### (*a*) INSPECTION AND CONTROL.

*Zanzibar.*—As far as possible the Sanitary Inspectors continue to watch all food supplies entering their districts.

The following may be given as an example of the various articles of food inspected and condemned:—

| | |
|---|---|
| 50 | tins Glaxo-ovo |
| 120 | bottles Soda water |
| 56 | bags Potatoes |
| 263 | bags Onions |
| 12 | bags Rice |
| 8 | bags Green Ginger |
| 43 | boxes Chocolates |
| 12 | cwts Dried Fish |
| 165 | cwts Dates |

*Wete.*—The local population appear to eat such food as they can afford and such as will at the same time give them a temporary feeling of repletion, rather than food which is scientifically adequate.

Food condemned:—

| | |
|---|---|
| Fish | 160 lbs |
| Condensed milk | 29 tins |
| Vermicelli | 24 packets |
| Bananas | 100 bunches |

*Chake Chake.*—No testing of milk is now carried out owing to the decision of the court not to allow lactometer tests as evidence.

*Mkoani.*—The milk is brought in large cans from surrounding villages every day.

### (*b*) MARKETS.

*Zanzibar.*—The Central Markets were inspected daily, and 160 lbs. meat, 240 lbs. fish and 486 baskets of fruit were condemned and destroyed.

During the year 18,323 samples of milk were tested by lactometer at the Milk Depôt.

*Chake Chake.*—The fly proof meat room is a great boon. The walls and pillars of the markets have been limewashed. Five concrete fish tubs have been placed at the market the use of which has resulted in a diminution of flies and wastage of fish. All commodities are regularly inspected and numerous quantities of fish, fruit, etc., were condemned when found unsound.

*Mkoani.*—Daily inspections were made of the various articles of food exposed for sale. The erection of a fly proof meat chamber such as those at Chake Chake and Wete is urgently required.

### (*c*) AERATED WATER FACTORIES.

*Zanzibar.*—No change.

*Chake Chake.*—Two factories were regularly inspected and various improvements made. During the year 494 bottles of mineral water were condemned as they were found to contain foreign matter such as grass, brush hairs, rat dung, dead insects, etc.

*Mkoani.*—There are none in Mkoani; most of the local shopkeepers retail aerated water and ice brought from Chake Chake.

### (*d*) SLAUGHTER HOUSES.

*Zanzibar.*—(See Veterinary Division Report, page 98).

*Chake Chake.*—Owing to the inconvenient situation of the premises, difficulty is experienced in inspecting and transporting the meat to the market. The chief difficulty and drawback is that the meat has to be carried on the shoulders of carriers through the dirty waters of the creek making contamination unavoidable. A site for a new slaughter house has been selected on the Wesha Road.

Animals slaughtered at the Government Abbatoir:—

| | |
|---|---|
| Cattle | 281 |
| Goats and sheep | 87 |

*Mkoani.*—At present there is none. A new slaughter house is to be erected on a site north of the customs beach. It is hoped and expected that this will be completed during 1931.

## 7. REDUCTION OF VERMIN.

*Zanzibar.*—*Rats.*—One trapper is alloted to each of the Sanitary Inspectors for work in his area, and are under his control. Owing to the loss of rat traps by the public, a system of receipt forms has now been introduced. The householders signs for the traps delivered, and receives a receipt from the trapper on the safe return of the traps to the Health Office.

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| No. of trappers employed | 7 | 7 | 7 |
| Rats trapped | 19,569 | 22,256 | 25,902 |

| | Rattus rattus. | Mus norvegicus. | Pachyura cærulea. | Mus musculus. | Cricetomys gambianus. |
|---|---|---|---|---|---|
| 1928 | 17,415 | 1,711 | 665 | .. | 23 |
| 1929 | 19,136 | 2,296 | 823 | .. | 1 |
| 1930 | 23,098 | 1,885 | 911 | .. | 8 |

*Pariah Dogs.*—Poison was laid down on two occasions 80 dogs and 6 cats were destroyed.

*Flies.* The large cage traps continued to be used with great success.

*Wete.*—*Rats.*—441 trapped and destroyed.

*Chake Chake.*—*Rats.*—162 trapped and destroyed.

*Flies.*—Numerous breeding places were discovered and dealt with.

*Pariah Dogs.*—Rice and fish baits poisoned with strychnine were laid regularly from March to the end of the year. As a result there were destroyed:—

| | |
|---|---|
| Dogs ... | 263 |
| Cats ... | 56 |
| Crows ... | 5 |

*Mkoani.*—*Rats.*—Rats caught and destroyed during the year 892.

*Flies.*—Breeding places were found near the market and treated.

*Pariah Dogs.*—Poisoned and buried during the year 90.

## (B) MEASURES TAKEN TO SPREAD THE KNOWLEDGE OF HYGINE AND SANITATION.

The "Jeanes" teacher continued to deliver lantern lectures in the districts throughout the year. Twenty lectures were delivered at twelve stations and all were well attended by the local inhabitants.

Hygiene is considered an important subject in the curricula of all Government schools; and an intelligent appreciation of the main factors concerned in the spread of our principal endemic diseases is the rule amongst the school boys.

The museum annexe which is provided with an excellent lecture hall fitted with a daylight magic lantern, was opened at the end of the year, and the Public Health exhibits from the main museum have been housed there. Health propaganda lectures and demonstrations can be carried on in this annexe with the maximum degree of efficiency and comfort.

## (C) TRAINING OF SANITARY PERSONNEL.

Lectures and practical instruction were given to Inspectors and Junior Inspectors as in previous years.

## (D) RECOMMENDATIONS FOR FUTURE WORK.

### Zanzibar Island.

1. *Mosquito and Insect-borne Diseases.*—The flooding of the Recreation Park is still a serious problem despite the fact that a sump and additional drains were put in last year, and some method is necessary which will dispose of the flood water in a shorter period than can be managed at present.

2 and 3. *Maternity and Child Welfare and Infectious Diseases Hospital.*—There is nothing to add to last year's recommendations.

4. The vacancy caused by the retirement of the Economic Biologist still remains unfilled. The urgent need of a Bacteriologist and Protozoologist cannot be too strongly stressed, and last year's remarks still hold good.

5. Additional accommodation on Prison Island Quarantine Station is required, owing to the increased capacity of the ships on the Bombay-Durban run (*vide* Section IV).

6. Fly proofing of latrines at the Central Prison is necessary to reduce the incidence of fly-borne disease especially bacillary dysentery.

### PEMBA ISLAND.

1. *Sanitary Inspector.*—As recommended last year a permanent European Sanitary Inspector is required for Pemba.

2. *Mosquito and Insect-borne Diseases.*—Work should be continued on the same lines as last year.

## IV. PORT HEALTH WORK AND ADMINISTRATION.

During the year four ships of the B.I.S.N. Co., Bombay-Durban Service were placed in quarantine on account of small-pox developing on board on the outward journey from Bombay. The ships in question were the "Karagola" on January 11th and again on March 8th, and the "Khandalla" and "Ellora" on March 22nd and 23rd respectively. As the Quarantine Station was still occupied by "Karagola" passengers it was necessary to keep them separated from the "Khandalla" passengers; when therefore the "Ellora" arrived on the following day with more passengers for quarantine there was no alternative other than to keep the deck passengers on board and the ship in quarantine until room could be found for them on Quarantine Island.

This is the first time on record that circumstances have rendered it necessary to find accommodation for the quarantine passengers of no less than three ships at once. The necessity arose partly because a second case occurred among the quarantined "Karagola" passengers on March 14th thus delaying their departure and also on account of the "Khandalla and "Ellora" arriving on consecutive days each with a case of small-pox on board.

As the two new "K" boats recently placed on this run are capable of carrying 1,200 deck passengers, additional accommodation at the quarantine station is urgently required. It is understood that provision will be included in the Estimates for 1932 for this service.

## PORT SANITATION RETURN, 1930.—STEAMERS.

| Months. | Arrivals. | | | Ships quarantined. | Ships claytonised. | Passengers landed. | Passengers under surveillance. | Number of passengers vaccinated | Passengers placed in quarantine. |
|---|---|---|---|---|---|---|---|---|---|
| | British. | Foreign. | Total. | | | | | | |
| January .. | 26 | 18 | 44 | 1 | 1 | 1,306 | 9 | 633 | 551 |
| February .. | 29 | 14 | 43 | .. | .. | 1,034 | .. | 214 | .. |
| March .. | 31 | 21 | 52 | 3 | 3 | 1,375 | 10 | 1149 | 1,261 |
| April .. | 29 | 16 | 45 | .. | .. | 1,663 | .. | 88 | .. |
| May .. | 32 | 20 | 52 | .. | .. | 2,143 | 1 | 32 | 3 |
| June .. | 33 | 17 | 50 | .. | .. | 1,746 | 12 | 143 | 2 |
| July .. | 33 | 21 | 54 | .. | .. | 1,792 | .. | 57 | .. |
| August .. | 32 | 20 | 52 | .. | .. | 2,430 | .. | 25 | .. |
| September .. | 35 | 19 | 54 | .. | .. | 2,754 | .. | 26 | .. |
| October .. | 36 | 21 | 57 | .. | .. | 2,076 | .. | 32 | .. |
| November .. | 30 | 17 | 47 | .. | .. | 1,597 | .. | 52 | .. |
| December .. | 27 | 19 | 46 | .. | .. | 1,217 | .. | 41 | .. |
| Total .. | 373 | 223 | 596 | 4 | 4 | 21,533 | 32 | 2492 | 1.817 |
| Total for 1929 .. | 414 | 206 | 620 | 4 | 4 | 16,832 | 2 | 797 | 2,625 |

## PORT SANITATION RETURN, 1930.—DHOWS.

| Months. | Arrivals. | | | Dhows quarantined. | Dhows claytonised. | Passengers under surveillance | Number of passengers vaccinated. | Passengers placed in quarantine. | Passengers landed. |
|---|---|---|---|---|---|---|---|---|---|
| | British. | Foreign. | Total. | | | | | | |
| January .. | 97 | 39 | 136 | .. | .. | .. | 851 | .. | 624 |
| February .. | 90 | 55 | 145 | 1 | 1 | .. | 1,149 | 61 | 951 |
| March .. | 78 | 91 | 169 | .. | .. | .. | 725 | .. | 297 |
| April .. | 77 | 35 | 112 | 1 | 1 | .. | 4 | .. | 211 |
| May .. | 94 | 1 | 95 | .. | .. | .. | 103 | .. | 172 |
| June .. | 149 | 1 | 150 | .. | .. | .. | 219 | .. | 114 |
| July .. | 192 | .. | 192 | .. | .. | .. | 72 | .. | 207 |
| August .. | 230 | 1 | 231 | .. | .. | .. | 67 | .. | 210 |
| September .. | 262 | 1 | 263 | .. | .. | .. | 43 | .. | 210 |
| October .. | 243 | 2 | 245 | .. | .. | .. | 46 | .. | 261 |
| November .. | 194 | .. | 194 | .. | .. | .. | 20 | .. | 213 |
| December .. | 249 | 13 | 262 | .. | .. | .. | 83 | .. | 202 |
| Total .. | 1,955 | 239 | 2,194 | 2 | 2 | .. | 3,382 | 61 | 3,672 |
| Total for 1929 .. | 1,086 | 220 | 1,306 | .. | .. | .. | 3,099 | .. | 3,339 |

## V. MATERNITY AND CHILD WELFARE.

During the past year an inadequate medical staff was fully occupied in attempting to conserve existing activities and any extension of medical work was out of the question. Nothing, therefore in the way of maternity and child welfare work was possible beyond the small amount coming within the routine duties of all Medical Officers, but it is satisfactory to note that 37 labour cases were conducted in Government hospitals without any fatality.

As in previous years every assistance possible was rendered by the Government staff to the Zanzibar Maternity Association. The annual report of the Association is included in Appendix IV, page 91, and presents a remarkable record of satisfactory and consistent progress. In the past the Association has obtained the necessary funds chiefly by subscriptions and donations and also by fees from patients who could afford to pay. The Government has also contributed an annual grant, but as pointed out in the report of the Honorary Secretary the stage now reached precludes further progress unless additional funds are made available. Until recently the work of the Association has been almost solely among members of communities who were able and willing to pay fees or subscriptions for services rendered, but in future any progress must necessarily lie chiefly among Arabs and Africans few of whom can afford to pay anything.

The potentialities of the present position cannot be over-estimated and every endeavour should be made to take advantage of it. Native prejudice is rapidly being overcome, thanks to the tactful and sympathetic methods adopted by Miss Locket, the Matron of the Maternity Home, and there are now a sufficient number of locally trained midwives and apprentices undergoing training to meet any immediate requirements.

At present the most urgent needs are the appointment of a Lady Medical Officer and a Lady Health Visitor, increased accommodation at the Zanzibar Maternity Home and the establishment of a similar Home on a smaller scale in Pemba.

All medical reports for many years have drawn attention to the invaluable work that could be undertaken by a Lady Medical Officer and Lady Health Visitor. Zanzibar, where purdah conventions are still strictly observed by a large section of the community, is unfortunate in possessing no lady doctor, and many lives are lost through the reluctance of women to seek treatment from any but one of their own sex. Only a perfunctory medical inspection of female school children can at present be carried out without injuring the susceptibilities of the parents, and until the services of a Lady Medical Officer and a Lady Health Visitor are available much progress that could be achieved in the way of maternity and child welfare work, general sanitation and social hygiene must remain in abeyance.

When the necessary extension to the Zanzibar Home is completed and a resident nurse appointed to assist the Matron, an admirable training school will be available for native midwives, and the establishment of district centres in both islands will become a possibility.

## VI. HOSPITALS AND DISPENSARIES.

### (A) OUT-PATIENTS.

The total number of attendances during the past year at all Government dispensaries was 382,855, of which 137,822 were new cases and 245,033 re-attendances. These figures show a decrease of 19,508 attendances, consisting of 7,314 new cases and 12,194 re-attendances as compared with the previous year, but an increase of 14,306 attendances, consisting of 3,986 new cases and 10,320 re-attendances, as compared with the figures for 1928.

The following table compares the number of new cases treated at each dispensary with those for the previous two years.

| ZANZIBAR ISLAND. | Cases treated. | | |
|---|---|---|---|
| *Zanzibar Town.* | 1928. | 1929. | 1930. |
| European ... | 469 | 403 | 445 |
| Native and Asiatic ... | 18,717 | 18,380 | 17,543 |
| Prison Infirmary ... | 940 | 1,599 | 1,545 |
| Police Lines ... | 2,649 | 2,776 | 2,917 |
| Mwembeladu ... | 11,883 | 12,364 | 15,076 |
| School Clinic ... | — | 2,203 | 2,406 |
| Infectious Diseases ... | — | 11 | 57 |
| Quarantine Station ... | — | — | 290 |
| *Northern District.* | | | |
| Mkokotoni ... | 4,966 | 2,579 | 2,669 |
| Chaani ... | 3,796 | 2,675 | 2,339 |
| Mahonda ... | 4,263 | 6,151 | 2,585 |
| Mbiji ... | 3,722 | 3,202 | 2,105 |
| Mangapwani ... | 6,113 | 3,610 | 2,549 |
| Mkwajuni ... | — | 4,492 | 4,608 |
| *Southern District.* | | | |
| Chwaka ... | 2,958 | 2,391 | 1,371 |
| Kizimkazi ... | 2,909 | 2,613 | 2,850 |
| Uzini ... | 3,720 | 4,240 | 2,994 |
| Machui ... | 2,109 | 2,007 | 2,407 |
| Walezo ... | 2,138 | 3,601 | 4,785 |
| Tunguu ... | 4,308 | 2,328 | 2,254 |
| Bweleo ... | 3,219 | 3,308 | 3,365 |
| Mwera ... | 3,776 | 4,445 | 3,364 |
| Bububu ... | 3,727 | 2,826 | 2,605 |
| Selem ... | 5,683 | 5,247 | 3,996 |
| Makunduchi ... | — | 6,934 | 7,684 |
| Temporary treatment centres... | — | 523 | 3,399 |
| PEMBA ISLAND. | | | |
| *Wete District.* | | | |
| Wete ... | 4,650 | 6,306 | 4,634 |
| Matangatwani ... | 2,658 | 2,751 | 2,372 |
| Tumbe ... | 838 | 945 | 592 |
| Mzambaraoni ... | 1,763 | 2,431 | 2,185 |
| *Chake Chake District.* | | | |
| Chake Chake ... | 11,072 | 12,263 | 13,064 |
| Tundaua ... | 1,651 | 1,576 | 1,270 |
| Ole ... | 1,503 | 1,760 | 2,238 |
| Stambuli ... | 2,085 | 2,463 | 2,297 |
| *Mkoani District.* | | | |
| Mkoani ... | 5,700 | 6,081 | 5,315 |
| Kengeja ... | 3,871 | 3,531 | 2,828 |
| Jambangome ... | 2,330 | 2,422 | 2,186 |
| Fufuni ... | 1,239 | 809 | 169 |
| Road Construction Camps ... | 2,411 | 890 | — |
| Kangani ... | — | — | 464 |
| | 133,836 | 145,136 | 137,822 |

Comments on the decreased attendances have already been made under "Public Health" Section II.

## District Dispensary Service.

In Pemba, the Medical Officer, stationed at Wete supervised the district dispensaries in the Wete District and one of the dispensaries, Stambuli, in the Chake Chake District. The Medical Officer stationed at Chake Chake had under his supervision the remaining dispensaries in the Chake Chake District and all the dispensaries in the Mkoani District.

In Zanzibar Island, Dr. Jermy was in charge of the district dispensaries until the 7th of January, Dr. Nicklin from the 7th of January until the end of October and Dr. Watkins-Pitchford during November and December. Each of these Medical Officers, however, had other duties to perform at the same time and it was therefore impossible for them either to make the regular visits to the dispensaries so essential to ensure adequate supervision or to maintain a supply of trained dispensers for replacements. The Medical Officer in charge of the dispensaries in Zanzibar Island is required not only to make a weekly visit to each of the numerous dispensaries scattered throughout the island and to train and re-train dispensers for all the dispensaries in both islands, but also to supervise the Central Dispensary where only natives are employed in preparing medicines and other articles for issue to the dispensaries. These duties, as has been emphasised in previous reports, more than fully occupy the whole time of a Medical Officer. Few natives at the present time can be relied upon to carry out their duties satisfactorily without constant supervision and if such supervision cannot be exercised over the dispensers they become lazy, careless and unpunctual, and the time, money and trouble expended on their training is wasted. To some extent the decrease in attendances last year instead of the usual increase was due to this cause. A certain number of dispensers were dismissed and other transferred to dispensaries where greater supervision was possible, but owing to an insufficient number of trained replacements being available it was necessary to close some dispensaries entirely and others for varying periods.

During the coming year it is hoped that the whole time of a Medical Officer will be available in Zanzibar Island for the important duties mentioned above and that some of the ground lost may be recovered.

The arrangement referred to in the 1929 report by which Nursing Sisters of the Missions visited various dispensaries to undertake the treatment of women was continued during the past year and very valuable work was done, but the Roman Catholic Mission found it necessary to close the Mkwajuni dispensary in July owing to no Sister being available.

## (B) IN-PATIENTS.

The following table shows the number of patients treated and deaths occurring in each Government Hospital during the past and two previous years:—

| | 1928. | | 1929. | | 1930. | |
|---|---|---|---|---|---|---|
| ZANZIBAR ISLAND. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| *Zanzibar Town.* | | | | | | |
| European ... | 45 | 1 | 39 | 1 | 73 | 1 |
| Native and Asiatic ... | 1,288 | 99 | 1,316 | 114 | 1,612 | 115 |
| Prison Infirmary ... | 141 | 3 | 180 | 10 | 182 | 12 |
| Police Lines ... | 151 | 3 | 154 | 1 | 181 | — |
| Infectious Diseases ... | 16 | — | 11 | — | 57 | 5 |
| *Northern District.* | | | | | | |
| Mkokotoni ... | 198 | — | 75 | — | 49 | — |
| *Southern District.* | | | | | | |
| Walezo Poor House ... | 407 | 122 | 330 | 102 | 350 | 120 |
| Selem ... | 70 | 1 | 93 | — | 66 | 1 |
| PEMBA ISLAND. | | | | | | |
| *Wete District.* | | | | | | |
| Wete ... | 499 | 12 | 523 | 47 | 447 | 26 |
| *Chake Chake District.* | | | | | | |
| Chake Chake ... | 603 | 25 | 531 | 40 | 544 | 30 |
| *Mkoani District.* | | | | | | |
| Mkoani ... | 141 | 5 | 175 | 3 | 148 | 5 |
| | 3,559 | 271 | 3,427 | 318 | 3,709 | 315 |
| Cases remaining from previous year ... | 226 | — | 239 | — | 253 | — |
| Total number of cases treated and deaths ... | 3,785 | 271 | 3,666 | 318 | 3,962 | 315 |

The more important causes of admission and death during the year were as follows:—

Cases. Deaths.

| | Cases. | Deaths. | | Cases. | Deaths. |
|---|---|---|---|---|---|
| Typhoid Fever ... | 7 | — | Pneumonia ... | 74 | 11 |
| Paratyphoid B ... | 5 | — | Duodenal ulcer ... | 4 | 1 |
| Malaria ... | 235 | 7 | Ankylostomiasis ... | 202 | 18 |
| Blackwater Fever ... | 5 | 2 | Appendicitis ... | 11 | 2 |
| Small-pox ... | 28 | 5 | Hernia ... | 203 | 13 |
| Dysentery ... | 102 | 9 | Nephritis ... | 29 | 12 |
| Tetanus ... | 1 | — | Hydrocele ... | 163 | — |
| Tuberculosis ... | 119 | 44 | Elephantiasis ... | 49 | — |
| Cancer ... | 21 | 4 | Fractures ... | 60 | 4 |
| Apoplexy ... | 11 | 6 | Other injuries ... | 28 | — |
| Paralysis ... | 22 | 11 | Senile and general debility ... | 157 | 69 |
| Heart disease ... | 35 | 13 | | | |
| Broncho-pneumonia ... | 29 | 6 | | | |

In addition to the 28 cases with five deaths of small-pox recorded above, 183 cases, with 44 deaths, were treated in isolation camps.

The inadequacy of hospital accommodation in the Protectorate has been drawn attention to in previous reports. In Zanzibar Island only 70 beds are available for a population of 110,000 and in Pemba 54 beds for a population of 90,000.

Proposals are at present under consideration with a view to providing increased accommodation in both islands, but some considerable time must elapse before it will be possible to recover the ground lost by many years of procrastination. Meanwhile it is of especial urgency to reduce the number of cases requiring admission to hospital as far as possible by intensive preventive measures and the provision of early and improved treatment at the town and district dispensaries.

### 1. Zanzibar European, Asiatic and Native Hospitals.

Dr. Vassallo, the Resident Surgical Officer, was in charge of these hospitals until the 7th of April, Dr. Young from this date until the 6th of October and Dr. Vassallo again from the 6th of October until the end of the year. Dr. Jermy acted as Medical Officer until the 17th of May, Dr. Watkins-Pitchford from this date until the 27th of October and Dr. Nicklin from the 27th October until the end of the year. In addition to the Resident Surgical Officer and Medical Officer, the medical staff consisted of a Matron, 3-5 Nursing Sisters, an Assistant Surgeon, a Sub-Assistant Surgeon and two Dispensers.

The following is a short summary of the work performed during the past year as compared with the two previous years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| In-patients ... | 1,333 | 1,355 | 1,685 |
| Out-patients, new cases ... | 19,186 | 18,783 | 18,103 |
| Out-patients, re attendances ... | 39,110 | 37,798 | 35,758 |
| Total attendances ... | 58,296 | 56,581 | 53,861 |
| Maternity cases ... | 30 | 35 | 22 |
| Operations, major ... | 576 | 710 | 629 |
| Operations, minor ... | 960 | 862 | 910 |
| Injections and irrigations ... | 3,017 | 2,987 | 3,184 |
| Medical boards ... | 45 | 43 | 50 |
| Medical examination ... | 257 | 225 | 311 |
| X-ray photographs ... | 64 | 335 | 524 |
| X-ray screenings ... | 211 | 34 | 80 |
| Post-mortem examination ... | 21 | 42 | 38 |
| Visits to patients ... | 2,000 | 2,731 | 2,963 |
| Ante-natal examinations ... | 162 | 174 | 195 |

The following were the more important operations performed during the year:—

| | | | |
|---|---|---|---|
| Appendicectomy | 12 | Colpo-perineorrhaphy | 2 |
| Laparotomy | 6 | Ovariotomy | 3 |
| Ac. Intestinal Obstruction | 3 | Sequestrectomy | 14 |
| Excision of Cæcum | 1 | Arthrotomy | 1 |
| Gastro-Jejunostomy | 7 | Arthrectomy | 1 |
| Cholecystostomy | 1 | Resection of Jaw | 1 |
| Talma-Morrison | 2 | Enucleation of eye | 1 |
| Partial Gastrectomy | 1 | Entropion | 1 |
| Hæmorrhoids | 41 | Cataract | 2 |
| Fistula | 2 | Hernia, radical cure | 112 |
| Varicocele | 3 | Hernia, strangulated | 12 |
| Castration | 15 | Amputations | 7 |
| Hydrocele, radical cure | 152 | Excision of Glands | 33 |
| Ext. Urethrotomy | 14 | Tonsillectomy | 16 |
| Scrotal Elephantiasis | 24 | Mastoid | 2 |
| Nephrotomy | 2 | Harelip | 1 |
| Hæmatocele | 4 | Removal F. B. under X-ray | 3 |
| Suprapubic Cystostomy | 2 | Skin Graft | 1 |
| Prostatectomy | 2 | Plastic | 1 |
| Hysterectomy | 7 | Tumours and cysts | 38 |
| Salpingectomy | 4 | | |

The deaths following operation numbered 29 as compared with 24 in 1929 and 27 in 1928.

### (a) European Hospital.

Of the 73 patients admitted, 25 were officials and 48 non-officials. One death from pneumonia occurred among the latter. The increase in the number of admission as compared with the two preceding years was due to the greater prevalence of malaria, only 9 and 11 cases being admitted in 1929 and 1928 respectively as against 32 last year. The more important causes of admission were:—

| | | | |
|---|---|---|---|
| Malaria | 32 | Appendicitis | 1 |
| Hæmorrhoids | 1 | Cholecystitis | 1 |
| Pneumonia | 2 | Concussion | 2 |
| Pleurisy | 1 | Parturition | 9 |
| Asthma | 2 | Fracture | 1 |
| Toxæmia | 1 | Undefined Fever | 4 |

The daily average in hospital was 1.41 as compared with 1.26 in 1929 and 1.70 in 1928.

### (b) Asiatic and Native Hospital.

The admissions to this hospital during the past year numbered 1,612 which is by far the largest number previously recorded, being 296 more than in 1929 and 324 more than 1928. Accommodation could only be found for this large number by over-crowding the wards, improvising beds on the verandahs and discharging patients earlier, to make room for more serious cases, than would otherwise have been advisable. A most urgently needed extension to the hospital is at present under consideration. Of the patients admitted last year 129 were Arabs, 209 other Asiatics, and 1,274 Africans. It is satisfactory to note that, in spite of the large increase in admissions, only one more death occurred than in the previous year. Of the 115 deaths, 21 were of Asiatics and 94 of Africans.

The following were the more important causes of admission and death:—

| | Cases. | Deaths. | | Cases. | Deaths. |
|---|---|---|---|---|---|
| Typhoid Fever ... | 9 | — | Pleurisy ... | 5 | — |
| Malaria ... | 89 | 4 | Gastric ulcer ... | 3 | — |
| Blackwater Fever ... | 3 | 1 | Duodenal ulcer ... | 3 | 1 |
| Dysentery ... | 29 | 5 | Ankylostomiasis ... | 71 | 5 |
| Tetanus ... | 1 | — | Appendicitis ... | 10 | 2 |
| Tuberculosis ... | 47 | 10 | Hernia ... | 125 | 9 |
| Syphilis ... | 28 | 1 | Nephritis ... | 12 | 4 |
| Gonorrhœa ... | 31 | — | Hydrocele ... | 100 | — |
| Filariasis ... | 12 | — | Ovarian cyst ... | 5 | 1 |
| Cancer ... | 10 | 4 | Uterine fibroid ... | 9 | — |
| Other tumours ... | 23 | — | Parturition ... | 14 | — |
| Meningitis ... | 2 | 1 | Abscess ... | 14 | 2 |
| Apoplexy ... | 11 | 5 | Elephantiasis ... | 35 | — |
| Heart disease ... | 27 | 12 | Diseases of bones ... | 11 | 1 |
| Lymphadenitis ... | 38 | — | Burns ... | 14 | 2 |
| Bronchitis ... | 35 | 2 | Fractures ... | 44 | 2 |
| Broncho-pneumonia ... | 19 | 4 | Other injuries ... | 131 | 3 |
| Pneumonia ... | 32 | 3 | | | |

The daily average in hospital was 73.26 as compared with 74.17 in 1929 and 67.16 in 1928.

## 2. Mkokotoni Hospital.

An Asiatic Dispenser was in charge until the 23rd of April and a native Dispenser from this date until the end of the year. Instead of the weekly visits of a Medical Officer essential for supervision, lack of staff permitted only irregular visits: in consequence there was a considerable decrease in the number of admissions and the standard of the work performed was less satisfactory than in previous years.

The following is a summary of the work done as compared with the two preceding years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| In-patients ... | 198 | 75 | 49 |
| Out-patients, new cases ... | 4,964 | 2,579 | 2,669 |
| Out-patients, re-attendances ... | 5,854 | 3,922 | 3,119 |
| Minor operations ... | 213 | 73 | 51 |
| Injections ... | 2,178 | — | 338 |
| Vaccinations ... | 98 | — | 1,339 |

The daily average in hospital was 2.89 as compared with 3.6 in 1929 and 4.2 in 1928.

No hospital accommodation exists for female patients; a small ward should be provided.

## 3. Chake Chake and Mkoani Hospitals.

Dr. Nicklin was in charge until the 4th of January, Dr. Austin from this date until the 7th of June and Dr. McCarthy from the 7th of June until the end of the year. In addition to the Medical Officer, the medical staff consisted of a Nursing Sister for nine months, a Sub-Assistant Surgeon and a Dispenser at Chake Chake and a Sub-Assistant Surgeon at Mkoani. The Medical Officer had also under his control, five district dispensaries and all the sanitation duties connected with Chake Chake and Mkoani townships and districts.

The following is a short summary of the work performed in connection with the hospitals and dispensaries as compared with the two previous years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Out-patients, new cases, Chake Chake ... | 11,072 | 12,263 | 13,064 |
| Out-patients, new cases, Mkoani ... | 5,700 | 6,081 | 5,315 |
| Out-patients, new cases, Districts ... | 15,090 | 10,988 | 9,155 |
| Re-attendances ... | 49,672 | 46,215 | 39,180 |
| Total attendances ... | 81,534 | 75,547 | 66,714 |
| In-patients, Chake Chake ... | 603 | 531 | 544 |
| In-patients, Mkoani ... | 141 | 175 | 148 |
| Operations (major) Chake Chake ... | 196 | 169 | 227 |
| Operations (minor) Chake Chake ... | 526 | 499 | 626 |
| Operations (minor) Mkoani ... | 179 | 576 | 329 |
| Injections, Chake Chake ... | 2,501 | 2,989 | 3,128 |
| Injections, Mkoani ... | — | 1,100 | 599 |
| Laboratory examinations ... | 1,350 | 1,006 | 839 |
| Vaccinations, Chake Chake ... | 2,545 | 779 | 20,241 |
| Vaccinations, Mkoani ... | 560 | 518 | 2,083 |

The returns show the decrease in out- and in-patients at Mkoani as due to a reduced number of ankylostomiasis, malaria and ulcer cases. The decrease in district dispensary attendances was due to the closure of two dispensaries during the year and the departure from the district of a large number of labourers on completion of road construction.

The average daily number in Chake Chake hospital was 23.07 as compared with 22.96 in 1929 and 22.35 in 1928. The more important causes of admission and death were as follows:—

| | Cases. | Deaths. | | Cases. | Deaths. |
|---|---|---|---|---|---|
| Malaria ... | 34 | 2 | Ankylostomiasis ... | 30 | 2 |
| Dysentery ... | 2 | — | Hernia ... | 45 | 2 |
| Tuberculosis ... | 4 | 1 | Nephritis ... | 3 | 2 |
| Filariasis ... | 23 | — | Schistosomiasis ... | 7 | — |
| Cancer ... | 3 | — | Hydrocele ... | 32 | — |
| Meningitis ... | 1 | 1 | Abscess ... | 29 | 1 |
| Cardiac disease ... | 4 | 1 | Ulcers ... | 31 | — |
| Lymphadenitis ... | 7 | 1 | Elephantiasis ... | 1 | — |
| Bronchitis ... | 10 | 1 | Diseases of bones ... | 6 | 1 |
| Pneumonia ... | 14 | 4 | Arthritis ... | 4 | 1 |
| Broncho-pneumonia ... | 3 | 1 | Fractures ... | 6 | 1 |
| Pleurisy ... | 6 | — | Other injuries ... | 46 | 1 |

Among the major operations performed were colostomy one, hæmorrhoids four, fistula one, archidectomy six, hydrocele radical cure 38, external urethrotomy two, scrotal elephantiasis five, hysterectomy one, colopo-perinæorraphy one, prolapsus uteri one, arthrotomy one, cataract five, hernia 41 (including seven strangulated), amputations six, tumours and cysts 23, mastoid one, cellulitis four.

At Mkoani the average daily number in hospital was 2.5, the more important causes of admission being:—

| | Cases. | Deaths. | | Cases. | Deaths. |
|---|---|---|---|---|---|
| Malaria ... | 8 | — | Pleurisy ... | 2 | — |
| Filariasis ... | 8 | — | Ankylostomiasis ... | 11 | 4 |
| Lymphadenitis ... | 2 | — | Hernia ... | 4 | — |
| Bronchitis ... | 10 | — | Injuries ... | 23 | — |
| Pneumonia ... | 3 | — | | | |

Seven non-European officials were admitted to Chake Chake hospital during the year and one to Mkoani hospital. In the previous year 16 were admitted to Chake Chake hospital.

## 4. Wete Hospital.

Dr. Young was in charge of this hospital until the 21st of January, Dr. McCarthy from this date until the 31st of May and Dr. Semple from the 31st of May until the end of the year. In addition to the Medical Officer, the medical staff consisted of a Nursing Sister for 10 months, a Sub-Assistant Surgeon for $8\frac{1}{2}$ months and a Dispenser for $3\frac{1}{2}$ months. The Medical Officer had also under his control the Funzi Island leper settlement, four district dispensaries and all the sanitation duties connected with Wete township and district.

The following is a short summary of the work performed in connection with the hospital and dispensaries as compared with the two previous years:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Out-patients, new cases, Wete ... | 4,650 | 6,306 | 4,634 |
| Out patients, new cases, District ... | 5,256 | 8,590 | 7,446 |
| Out-patients, re-attendances ... | 20,707 | 25,061 | 21,512 |
| In-patients, total attendances ... | 30,613 | 39,957 | 33,592 |
| In-patients ... | 499 | 531 | 447 |
| Operations (major) ... | 165 | 172 | 116 |
| Operations (minor) ... | 275 | 702 | 477 |
| Injections ... | 633 | 581 | 610 |
| Laboratory examinations ... | 1,094 | 930 | 1,271 |
| Vaccinations ... | 1,422 | 1,307 | 37,044 |

The average daily number in hospital was 17.48 as compared with 18.5 in 1929 and 16.73 in 1928. The more important causes of admission and death were as follows:—

| | Cases. | Deaths. | | Cases. | Deaths. |
|---|---|---|---|---|---|
| Paratyphoid B ... | 1 | — | Gangrene of lungs ... | 1 | 1 |
| Malaria ... | 19 | — | Ankylostomiasis ... | 26 | 5 |
| Blackwater fever ... | 2 | 1 | Hernia ... | 23 | — |
| Tuberculosis ... | 9 | 1 | Nephritis ... | 2 | 1 |
| Cancer ... | 4 | — | Hydrocele ... | 30 | — |
| Filariasis ... | 10 | — | Parturition ... | 7 | — |
| Broncitis ... | 10 | — | Abscess ... | 13 | 1 |
| Broncho-pneumonia ... | 4 | 1 | Elephantiasis ... | 5 | — |
| Pneumonia ... | 11 | 2 | Fractures ... | 5 | 1 |
| Pleurisy ... | 4 | — | Other injuries ... | 60 | 1 |

In addition to the above, 83 cases of small-pox, resulting in 13 deaths, were treated at isolation camps.

Among the major operations performed were appendicectomy 1, hæmorrhoids 4, fistula 2, rectal prolapse 1, varicocele 1, orchidectomy 1, hydrocele, radical cure 23, external urethrotomy 1, scrotal elephantiasis 2, colpo-perinæorraphy 1, sequestrectomy 2, iridectomy 1. hernia 22 (including 1 strangulated), amputations 2, tumours and cysts 8, mastoid 1, cellulitis 1.

Three non-European officials were admitted into this hospital as compared with six in the previous year.

The larger number of out-patients and admissions to hospital in 1929 is chiefly accounted for by the longer period it was possible to leave the same Medical Officer in charge. The natives are very conservative and, in addition to the waste of time any transfer entails, some time elapses before a new Medical Officer obtains their confidence. Last year also much of the Medical Officer's time was occupied in dealing with the small-pox epidemic which broke out in June. Moreover the district dispensary at Tumbe was closed from

August. Owing to its isolated position, supervision of this dispensary has been difficult and as usual in such cases the native dispenser became lazy and took little interest in his work. Shortage of medical staff prevented a sufficient number of dispensers being trained for replacements and it was decided to close the dispensary until a more reliable dispenser and more adequate supervision can, be provided.

## (C) OPERATIONS.

The following are the more important operations performed at all hospitals during 1930:—

| | | |
|---|---|---|
| 1. | *Abdominal—* | |
| | Partial Gastrectomy | 1 |
| | Gastro-Jejunostomy | 7 |
| | Appendicectomy | 13 |
| | Laparotomy | 6 |
| | Acute Intestinal Obstruction | 3 |
| | Cholecystotomy | 1 |
| | Excision of Cæcum | 1 |
| | Talma-Morrison | 2 |
| | Intussusception | 2 |
| 2. | *Rectal—* | |
| | Prolapse of Rectum | 1 |
| | Hæmorrhoids | 49 |
| | Fistula | 5 |
| | Imperforate Anus | 1 |
| 3. | *Genito-Urinary—* | |
| | Hydrocele, radical cure | 213 |
| | Nephrotomy | 2 |
| | Perinephritic Abscess | 1 |
| | Varicocele | 4 |
| | Prostatectomy | 2 |
| | Cystotomy | 2 |
| | Scrotal elephantiasis | 31 |
| | Hæmatocele | 4 |
| | Orchidectomy | 22 |
| | External Urethrotomy | 17 |
| 4. | *Gynæcological—* | |
| | Salpingectomy | 4 |
| | Bartholin Cyst | 2 |
| | Prolapsus Uteri | 1 |
| | Ovarian Cyst | 3 |
| | Hysterectomy | 8 |
| | Colpo-perinæorraphy | 4 |
| 5. | *Bones and Joints—* | |
| | Resection of Jaw | 1 |
| | Sequestrectomy | 16 |
| | Arthrotomy | 2 |
| | Arthrectomy | 2 |
| 6. | *Eye—* | |
| | Cataract | 7 |
| | Enucleation | 1 |
| | Iridectomy | 1 |
| | Entropion | 1 |
| 7. | *Hernia—* | |
| | Radical cure | 167 |
| | Strangulated | 20 |
| 8. | *Other Operations* | |
| | Amputations | 15 |
| | Adenectomies | 33 |
| | Tumours and Cysts | 38 |
| | Tonsillelctomy | 16 |
| | Mastoid | 4 |
| | Cellulitis | 88 |
| | Skin Graft | 1 |
| | Tendon Suture | 1 |
| | Plastic | 1 |
| | Harelip | 1 |
| | Removal of Foreign Body under X-ray | 3 |

## (D) MEDICAL BOARDS AND EXAMINATIONS.

Of 50 Medical Boards held during the past year, 4 were on European and 10 on non-European Officials, and as a result one of the former and five of the latter were permanently invalided out of the service. In addition, one European and two Asiatics were granted sick leave to Europe or India, their return to the Protectorate for further service to be dependent on the result of a medical examination at the expiration of their leave.

Special medical examinations during the year numbered 311 of which 178 were of candidates for Government employment and 133 of officials prior to proceeding on leave.

## (E) X-RAY EXAMINATIONS.

During the year, 80 screen examinations and 524 photographs, including 41 of barium meals, were taken. The department is greatly indebted to the Director of Electricity and Wireless for advice and assistance and for placing at the disposal of the hospital the services of Mr. Roberts, Assistant Electrical Engineer, to whom especially is due credit for the excellent results obtained.

## (F) DENTAL SERVICE.

The arrangement with the Tanganyika Territory Government remained in force and during the year Captain A. S. Newton, the Dental Surgeon, paid two visits, one of two week's and one of 4½ week's duration. His report is included under Appendix V page 93.

The unsatisfactory condition of the teeth of the natives of the Protectorate has been drawn attention to in previous reports. Periodical visits of short duration leave no time available for work among the natives generally and Captain Newton again stresses the urgent need for the appointment of a whole-time dental surgeon.

## (G) EYE CLINIC.

Eye conditions, many of a serious nature, are common among all races in the Protectorate. At the dispensaries there is neither the requisite time nor skill to give the necessary treatment and during November and December a special eye clinic was opened for certain hours each day under the control of Dr. Watkins-Pitchford. Dr. Pitchford had also under his control the District Dispensary Service and little of his time was therefore available for eye work, but thanks to his energy and interest and by giving up much of his spare time and opening the clinic on Sundays and holidays, work of much value was done. During the two months the clinic was open, the total attendances numbered 1,205 of which 167 were new cases and 1,038 repetitions. The chief conditions treated were conjunctivitis 67, iritis 17, diseases of the lids 16, cataract 14, refractive errors 12, corneal ulcers and keratitis 6, optic atrophy 5,

## (H) GULIONI INFECTIONS DISEASES HOSPITAL.

Returns for the year 1930:—

| | Remaining from 1929. | Admitted during 1930. | Total. | Died. | Discharged. | Remaining end of 1930. | |
|---|---|---|---|---|---|---|---|
| *Cases:* | | | | | | | |
| Small-pox | ... | 28 | *28 | 5 | 23 | ... | * Ex. S. S. Karagola. 4<br>,, S. S. Karagola. 2<br>,, S. S. Khandalla 1<br>,, Dhow 1<br>Local 20 |
| Chicken-pox | 2 | 23 | 25 | ... | 25 | ... | |
| Measles | ... | 1 | 1 | ... | 1 | ... | |
| Leprosy | ... | 5 | 5 | ... | *2 | 3 | * 1 to Walezo<br>1 to Funzi |
| Suspected Small-pox | ... | 1 | 1 | ... | 1 | ... | |
| Total | 2 | 58 | 60 | 5 | 52 | 3 | |
| *Contacts:* | | | | | | | |
| Small-pox | ... | 94 | 94 | *1 | 93 | ... | * Chronic Malaria |
| Chicken-pox | ... | 8 | 8 | ... | 8 | ... | |
| Total | ... | 102 | 102 | 1 | 101 | ... | |
| Grand Total | 2 | 160 | 162 | 6 | 153 | 3 | |

## (I) BUILDINGS.

| | Rs. |
|---|---|
| *New Buildings.* | |
| Chaani Dispensary, completion ... | 1,023 |
| *Additions and repairs.* | |
| Administrative Offices ... | 741 |
| Zanzibar European Hospital ... | 1,281 |
| Zanzibar Asiatic and Native Hospital ... | 999 |
| Wete Hospital ... | 4,243 |
| Chake Chake Hospital ... | 1,297 |
| Mkokotoni Hospital ... | 107 |
| Ziwani Hospital ... | 183 |
| Mwembeladu Maternity Home ... | 251 |
| Bububu Dispensary ... | 10 |
| Gulioni Infectious Diseases Hospital ... | 390 |
| Funzi Leper Settlement ... | 400 |
| Zanzibar School Clinic ... | 18 |
| Rs.... | 10,943 |

# VII. PRISONS AND ASYLUMS.

## (A) PRISONS.

The following is a summary of the more important returns from each prison:—

| | Zanzibar | Mkokotoni | Chwaka | Chake-Chake | Wete | Mkoani | Total |
|---|---|---|---|---|---|---|---|
| No. of prisoners remaining end of 1929. | 111 | 5 | 6 | 21 | 14 | 11 | 168 |
| No. admitted during 1930 | 548 | 50 | 26 | 241 | 165 | 171 | 1201 |
| No. discharged during 1930 | 503 | 51 | 26 | 251 | 154 | 163 | 1148 |
| No. released on medical grounds during 1930 | 3 | ... | ... | ... | ... | ... | 3 |
| No. died during 1930. | 12 | ... | ... | 1 | ... | ... | 13 |
| No. remaining in prison end of 1930. | 141 | 4 | 6 | 10 | 25 | 19 | 205 |
| Average daily number in prison. | 130.37 | 6.01 | 6.96 | 19.76 | 17.73 | 16.59 | 197.42 |
| No. of illnesses treated | 1530 | 74 | 54 | 164 | 87 | 207 | 2116 |
| No. admitted to Hospital | 179 | 2 | ... | 22 | 12 | 29 | 244 |

The causes of deaths and release on medical grounds were as follows:—

Death.—Dysentery 5, pulmonary tuberculosis 1, bronchiectasis 1, general debility 1, senile debility 4, chronic cystitis 1.

Release on Medical Grounds.—Loss of sight 1, chronic nephritis 1, tubercular paritonitis 1.

The more common or important illnesses occurring among prisoners were malaria 163, dysentery 62, tuberculosis 5, filariasis 18, lymphadenitis 27, bronchitis 94, ankylostomiasis 127, hernia 19, abscess 7, ulcers 74, external injuries 507, undefined fever 68.

All the cases of dysentery occurred in the Central Prison, Zanzibar. Reference to this epidemic is referred to in the D.D.S.S.'s report page 28.

In 1929, the average daily number of prisoners was 212.23. Seventeen deaths occurred and three were released on medical grounds; in 1928 the average daily number was 210.93 with three deaths and three released on medical grounds.

## (B) LUNATIC ASYLUM.

Summary for the year 1930—

| | Males. | Females. | Total. |
|---|---|---|---|
| Patients remaining 31st December, 1929 ... | 14 | 11 | 25 |
| Patients admitted during 1930 ... | 17 | 1 | 18 |
| Patients discharged cured ... | 5 | — | 5 |
| Patients discharged to care of relatives ... | — | 1 | 1 |
| Patients died ... | 7 | 2 | 9 |
| Patients remaining 31st December, 1930 ... | 19 | 9 | 28 |

Variety of alienation—

| | Remaining from 1929. | Admitted. | Discharged. | Died. | Remaining end of 1930. |
|---|---|---|---|---|---|
| Melancholia | 8 | 4 | 3 | 1 | 8 |
| Mania | 7 | 10 | 3 | 6 | 8 |
| General paralysis | 1 | — | — | — | 1 |
| Epileptic | 1 | — | — | — | 1 |
| Senile dementia | 8 | 4 | — | 2 | 10 |
| Total | 25 | 18 | 6 | 9 | 28 |

Causes of death:

| | M. | F. |
|---|---|---|
| Senile debility | 1 | — |
| General debility | 1 | — |
| Myocarditis | 1 | — |
| Senile dementia | 1 | 2 |
| Acute mania | 3 | — |

The existing accommodation is wholly inadequate and unsatisfactory in almost every respect. In previous reports the need has been stressed for a properly equipped mental hospital where earlier and more curable cases can be treated and cared for.

## (C) POOR ASYLUM.

The excellent record of this institution was fully maintained throughout the past year. Sisters of the Roman Catholic Mission continued to care for the health, comfort and well-being of the inmates, and the atmosphere of contentment pervading the institution speaks volumes for their skill, tact and sympathy.

The following is the return of in-patients for the year—

| | Males. | Females. | Total. |
|---|---|---|---|
| Patients remaining on 31st December, 1929 ... | 72 | 46 | 118 |
| Patients admitted during 1930 ... | 248 | 102 | 350 |
| Patients died during 1930 ... | 73 | 47 | 120 |
| Patients discharged during 1930 ... | 169 | 51 | 220 |
| Patients remaining at the end of 1930 ... | 79 | 49 | 128 |

The principal causes of death were returned as senility 59, tuberculosis 28, paralysis 11, nephritis 5.

Many natives from neighbouring villages seek treatment at the dispensary attached to the Asylum, and during the year the out-patient attendances numbered 17,989 of which 4,785 were new cases and 13,204 re-attendances. The more common or important conditions treated were typhoid 1, malaria 510, yaws 152, tuberculosis 50, venereal diseases 194, rheumatism 97, paralysis 33, eye diseases 92, respiratory diseases 297, digestive diseases 2,026 (ankylostomiasis 1,269), skin and cellular tissue diseases 493, senile and general debility 235.

### (D) LEPER SETTLEMENT.

See Appendix II.

## VIII. METEOROLOGY.

A brief summary of the meteorological returns available is contained in Table IV on page 70. In Zanzibar Town the rainfall during the past year was 12 inches greater than in 1929 and nearly 6 inches greater than an average taken over forty years. Reference has already been made under "Public Health" page 6, to the increased number of deaths returned as due to malaria in the township and the increased incidence of the disease and its sequelæ among all communities. In Pemba, on the other hand, the rainfall was about 15 inches below that of 1929 and 19 inches below an average taken over thirty years, with the result that a considerable decrease in the incidence of malaria is shown in the returns from all centres throughout the island. The greatest rainfall occurred in Zanzibar Town during the months of March, 19.2 inches, April, 13.94 inches, November, 11.29 inches, and in Pemba during April, 19.4 inches, March, 15.27 inches and November 10.76 inches. The greatest rainfall on any one day was 3.56 inches on the 13th of March in Zanzibar and 5.1 inches on the 12th of April in Pemba. The absolute maximum temperature was recorded as 90.0° on the 26th of January in Zanzibar and 92.5° on the 9th of March in Pemba. The absolute minimum was 70.6° on the 30th of June in Zanzibar and 72.0° on two days, the 21st and 31st of July, in Pemba. In Zanzibar Town, the means for the year were, maxima temperatures 84.3°, minima temperatures 76.5°, barometric pressures 30.139°, dew points 70.8° and relative humidities 74%.

J. A. TAYLOR,

*Director of Medical and Sanitary Services.*

# IX. SCIENTIFIC.

## (A) GENERAL.

The Protectorate still remains without the services of a Bacteriologist and since the abolition of the post of Economic Biologist no member of the staff has been available for scientific work. Perusal of Section VI of this report will make it obvious that each medical officer has been more than fully occupied during the past year by ordinary routine duties and that it has been impossible to find time for special work. The officer undertaking the combined duties of Health Officer and Port Health Officer for Zanzibar Town has supervised the work of the bacteriological laboratory as far as possible, and from the appended report it will be seen that a large amount of valuable routine work has been accomplished.

The department possesses well-equipped laboratories, and exceptional opportunities exist in the Protectorate for research work and investigations in many directions. Moreover recent advances in medicine make it increasingly necessary for Medical and Sanitation Officers to have at their disposal the services of a bacteriologist to enable modern methods to be applied to the diagnosis, treatment and prevention of disease.

It is hoped that it will be found possible during the coming year to make this appointment so essential in connection with the modern practice of curative and preventive medicine.

## (B) LABORATORY REPORTS.

### 1. Zanzibar.

As will be seen from the Tables, the greater part of the work in the Laboratory during the year was routine work undertaken by the Laboratory Staff on material supplied by the Hospital.

The monthly examinations of water from Bububu and Chem Chem springs showed that bacteriologically the water is of satisfactory quality. The Chem Chem water is inferior to Bububu water, doubtless owing to the less perfect protection of the spring from pollution by birds and lizards.

The isolation of B dysenteriæ "Strong" type from three cases is of interest, the organisms being found at intervals during the year. Identification was by fermentation reactions only. Unfortunately cultures were not kept, so that further examination of this very uncommon organism cannot be made.

There has been a marked increase in the number of agglutination tests (Widal Reaction) for the Enteric Group, and an increase of positive results compared with last year. Blood culture for organisms of this Group was made in 10 cases, with three positive findings, all B Typhosus. The infection is believed to be due to "carriers", and it is intended to investigate this question in 1931.

There was a decrease in blood slides submitted for diagnosis of Malaria, with an actual as well as relative increase of Benign Tertian type infections.

# ZANZIBAR BACTERIOLOGICAL LABORATORY RETURN FOR THE YEAR 1930.

## BLOOD.

| Total:—5,068. | Number |
|---|---|
| Blood Sugar estimations ... | 168 |
| Blood Urea estimations ... | 13 |
| Blood Sugar tolerance test ... | 1 |
| Red cell counts ... | 59 |
| White cell counts ... | 47 |
| Hæmoglobin ... | 55 |
| Differential counts ... | 77 |
| Colour Index ... | 9 |

| | | Pos. | Neg. |
|---|---|---|---|
| Micro-filaria ... | | 38 | 115 |
| Spirochæta obmermeyeri ... | | 1 | 2 |
| Trypanosomes ... | | 0 | 5 |
| Myeloid leukæmia ... | | 1 | 0 |
| †Widal's test:— B. typhosus | 20 | 44 | 171 |
| B. paratyphosus A. | 2 | | |
| B. paratyphosus B. | 13 | | |
| Micrococci melitensis | 9 | | |
| Wassermann reactions ... | | 192 | 205 |
| Van den Bergh's reaction ... | | 1 | 0 |
| Cul. Exam:— B. typhosus | 3 | 3 | 7 |
| B. paratyphosus A. | 0 | | |
| B. paratyphosus B. | 0 | | |
| Micro-organisms ... | | 0 | 5 |

| | Un-defined | S. T. | B. T. | Q. | Neg. |
|---|---|---|---|---|---|
| *Malaria | 326 | 84 | 605 | 7 | 2,807 |

## SPUTUM.

| Total:—437. | Pos. | Neg. |
|---|---|---|
| Tubercle bacilli ... | 105 | 305 |
| Spirochæta bronchialis ... | 0 | 1 |
| Pneumococci ... | 12 | 1 |
| Micrococci catarrhalis ... | 11 | 2 |

### Fæces. Total:—2,609.

| | | | Pos. | Neg. |
|---|---|---|---|---|
| Amœbæ | E. histolytica | 10 | 11 | 59 |
| | A. coli | 1 | | |
| Ankylostoma ... | | | 942 | 371 |
| Ascaris ... | | | 161 | 201 |
| Trichuris ... | | | 267 | 116 |
| Bilharzia ... | | | 10 | 154 |
| Tænia | saginata | 7 | 7 | 149 |
| | solium | 0 | | |
| Giardia intestinalis ... | | | 3 | 0 |
| Strongyloides ... | | | 4 | 0 |
| Oxyuris vermicularis ... | | | 0 | 1 |
| Occult blood ... | | | 1 | 1 |
| Cul. examinations:— | | | | |
| B. dysentereriæ | B. shiga | 12 | 33 | 65 |
| | B. flexner | 18 | | |
| | B. strong | 3 | | |
| Enteric group | B. typhosus | 1 | 2 | 49 |
| | B. paratyphosus A | 0 | | |
| | B. paratyphosus B | 1 | | |
| B. Asiaticus castellani ... | | | 1 | 0 |
| Streptococci ... | | | 1 | 0 |

## URINE.

| Total:—985. | Number |
|---|---|
| General examinations ... | 770 |
| Chlorides ... | 5 |
| Urea estimations ... | 7 |
| Nitrogen estimations ... | 3 |
| Uric Acid estimations ... | 1 |

| | Pos. | Neg. |
|---|---|---|
| Sugar ... | 13 | 7 |
| Albumin ... | 3 | 0 |
| Pus ... | 1 | 0 |
| Tubercle bacilli ... | 0 | 1 |
| Diazo reaction ... | 2 | 0 |
| Acetone ... | 0 | 1 |
| Diacetic acid ... | 0 | 1 |
| Gonococci ... | 31 | 61 |
| Spermatozoa ... | 4 | 3 |
| Bilharzia ... | 22 | 30 |
| Micro-filaria ... | 1 | 0 |
| Biological test for T. B. ... | 0 | 1 |
| Cul. examination:— | | |
| B. coli ... | 10 | 5 |
| Enteric group ... | 0 | 2 |

### Nasal Secretion. Total:—56.

| | Pos. | Neg. |
|---|---|---|
| B. lepræ ... | 15 | 41 |

REMARKS;— *This number includes the routine examination of 575 school-children out of which number 76 were positive undefined parasites and 499 were negative.
†This number includes the examination of 100 goats and 3 monkey's blood for micrococci melitensis, out of which 2 goats and 2 monkeys were posisitive, and 98 goats and 1 monkey were negative.

## ZANZIBAR BACTERIOLOGICAL LABORATORY RETURN FOR THE YEAR 1930. "B".

### RAT EXAMINATION.

| Total:—2,400. | Pos. | Neg. |
|---|---|---|
| B. pestis ... | 0 | 2,400 |

### MICELLANEOUS.

| Total:—62. | Number. |
|---|---|
| Breast Milk:—General examination ... | 1 |
| Fluid from Abdomen General examination ... | 1 |
| Gastric Juice ,, ,, ... | 2 |

| | Pos. | Neg. |
|---|---|---|
| Spleen Smear:—Malaria ... | 0 | 1 |
| ,, ,, Plague ... | 0 | 1 |
| Lung Smear:—Streptococci, Gram positive and negative diplococci and Gram positive bacilli ... | 1 | 0 |
| Blood-clot:—Bilharzia ... | 0 | 1 |
| Eye Smear:—Gonococci ... | 1 | 1 |
| Vomit:—Free H. Cl. ... | 1 | 0 |
| Gastric Juice:—Free H. Cl. ... | 4 | 0 |
| ,, ,, Total Acid ... | 4 | 0 |
| Smear from Chancre:—Spirochæta pallida ... | 1 | 1 |
| Cerebro Spinal Fluid:—Sugar ... | 0 | 1 |
| ,, ,, ,, Polymorphonuclears ... | 1 | 0 |
| Smear from Brain:—Meningococci ... | 0 | 1 |
| Pus from Sinuses:—Mycotic infection ... | 3 | 3 |
| Scraping from Ulcer:—Staphylococci aureus ... | 1 | 0 |
| Von Pirquete's test ... | 7 | 15 |
| Cul. Examinations:— | | |
| Throat Swab:—B. diphtheria ... | 0 | 1 |
| Breast Milk:— Staphylococci ... | 1 | 0 |
| Fluid from shoulder:—Gram negative bacilli ... | 1 | 0 |
| Pus:—B. pyogenus and B. proteus vulgaris ... | 1 | 0 |
| ,, B. pyocyaneous and B. proteus vulgaris ... | 1 | 0 |
| ,, Staphylococci and B. proteus vulgaris ... | 1 | 0 |
| Pus from Brain:—Meningococci ... | 1 | 0 |
| Hair:—Fungus ... | 0 | 1 |
| Scraping from Skin:—Strepcocci. Staphylococci and Gram negative bacilli | 1 | 0 |

### VACCINES.

| Total:—18. | Number. |
|---|---|
| B. typhosus ... | 1 |
| B. coli ... | 3 |
| B. acne ... | 1 |
| B. catarrhalis ... | 1 |
| Polyvalent ... | 12 |

### PATHOLOGICAL EXAMINATION.

| Total:—9. | Number. |
|---|---|
| Epithelioma ... | 1 |
| Fibroma ... | 1 |
| Epidermoid carcinoma ... | 1 |
| Scirrhous-cell carcinoma ... | 1 |
| Fibro sarcoma ... | 1 |
| Spindle-cell sarcoma ... | 1 |
| Inflamatory tissue ... | 2 |
| Blood-clot ... | 1 |

| Total:—287. | Number. |
|---|---|
| Bacteriological examination:—Water ... | 72 |
| ,, ,, Condensed Milk ... | 1 |
| ,, and Chemical ,, Fresh Milk ... | 8 |
| Legal Cases ... | 40 |
| Invoices ... | 166 |

## 2. CHAKE CHAKE LABORATORY RETURN.

| Blood Examinations Total. 625 | | Fæces Total. 52 | | Sputum for T.B. Total. 31 | | Urine Total. 121 | | Nasal Examinations for M. lepræ Total - 10 | |
|---|---|---|---|---|---|---|---|---|---|
| *Malaria* B. T. | 226 | Ankylostoma | 36 | Positive | 8 | General | 23 | Positive | 3 |
| S. T. | 53 | Ascaris | 2 | Negative | 23 | Bilharzia | 73 | Negative | 7 |
| Undefined | 37 | Amœbic Cyst | 3 | | | Negative | 25 | | |
| Negative | 307 | Bilharzia | 1 | | | | | | |
| Micro-filaria | 2 | Trichuris | 3 | | | | | | |
| | | Negative | 7 | | | | | | |

## 3. WETE LABORATORY RETURN.

| Blood Examinations Total - 630 | | Urine Total - 67 | | Nasal Examinations for M. lepræ Total - 361 (Last half year only) | | Sputum for T. B. Total - 29 (Last half year only) | | Fæces Total - 184 (Last half year only) | |
|---|---|---|---|---|---|---|---|---|---|
| *Malaria* S. T. | 65 | Sugar estinations | 10 | Positive | 53 | Negative | 20 | Ankylostoma | 105 |
| B.T. | 75 | Bilharzia | 5 | Negative | 308 | Positive | 9 | Ascaris | 4 |
| B. T. & S. T. | 9 | Rothera | 11 | | | | | E. histolytica | 1 |
| Microfilaria | 6 | Routine examinations | 41 | | | | | Negative | 74 |
| Negative | 344 | | | | | | | | |
| Total | 499 | | | | | | | | |
| Khan Test | 108 | | | | | | | | |
| Blood Sugar | 23 | | | | | | | | |

## TABLE I.

### A. EUROPEAN STAFF.

| Name. | Rank and Appointment. | Where Stationed on 31st December, 1930. |
|---|---|---|
| J. A. Taylor | Director of Medical and Sanitary Services | Zanzibar |
| B. Spearman | Deputy Director of Sanitary Services | ,, |
| S. M. Vassallo | Resident Surgical Officer | ,, |
| J. M. Semple | Medical Officer | Wete |
| W. A. Young | ,, ,, | On leave |
| A. C. Freeth | ,, ,, | ,, ,, |
| H. G. Wiltshire | ,, ,, | Zanzibar |
| H. O. Watkins-Pitchford | ,, ,, | ,, |
| W. H. Smith | ,, ,, | On leave |
| D. D. McCarthy | ,, ,, | Chake Chake |
| R. Nicklin | ,, ,, | Zanzibar |
| T. C. Findlay | ,, ,, | ,, |
| Miss A. E. Davis | Matron | ,, |
| ,, M. A. McKie | Nursing Sister | ,, |
| ,, M. M. Richards | ,, ,, | ,, |
| ,, M. K. O'Shea | ,, ,, | ,, |
| ,, M. G. Miller | ,, ,, | Chake Chake |
| ,, M. Cottier | ,, ,, | Wete |
| ,, A. M. Brewster | ,, ,, | Zanzibar |
| ,, M. E. Cleaver | ,, ,, | ,, |
| P. Cairns | Sanitary Superintendent | On leave |
| E. H. Lavers | European Sanitary Inspector | Zanzibar |
| J. E. Harmston | Accountant and Storekeeper | ,, |

### B. PRINCIPAL MEMBERS OF SUBORDINATE STAFF.

| Name. | Rank. | Where Stationed on 31st December, 1930. |
|---|---|---|
| K. V. Joshi | Assistant Surgeon | Zanzibar |
| C. D. Rana | Sub-Assistant Surgeon | Chake Chake |
| M. L. Mehta | ,, ,, | Zanzibar |
| M. V. Vaidya | ,, ,, | Mkoani |
| R. C. Sood | ,, ,, | Zanzibar |
| T. W. Dev | ,, ,, | On leave |
| Dinanath Koura | ,, ,, | Zanzibar |
| J. F. de Cruz | Dispenser | ,, |
| A. J. Rawal | ,, | ,, |
| M. da Silva | ,, | Chake Chake |
| J. J. Antao | ,, | Wete |
| P. da Cunha | ,, | Zanzibar |
| P. S. Patel | ,, | ,, |
| J. K. Gohel | Sanitary Inspector | Chake Chake |
| A. A. Madhani | ,, ,, | Zanzibar |
| A. G. Kark | Senior Laboratory Assistant | ,, |
| I. B. Martin | Chief Clerk | ,, |
| F. X. F. Lobo | Cashier | ,, |
| S. B. P. Fernandes | Asst. Store-Keeper | ,, |

## C. APPOINTMENTS, CHANGES, Etc., IN STAFF.

| Name. | Rank of Appointment. | Date. |
|---|---|---|
| APPOINTMENTS. | | |
| *(a)* Europeans. | | |
| T. C. Findlay | Medical Officer | 1-8-30 |
| Miss A. E. Davis | Matron | 19-10-30 |
| ,, M. G. Miller | Nursing Sister | 30-1-30 |
| ,, M. Cottier | ,, | 24-4-30 |
| ,, A. M. Brewster | ,, | 14-8-30 |
| ,, M. E. Cleaver | ,, | 14-8-30 |
| *(b)* Asiatics. | | |
| P. S. Patel | Dispenser | 22-3-30 |
| ACTING APPOINTMENTS. | | |
| B. Spearman | Deputy Director of Sanitary Services, as Acting Director of Medical and Sanitary Services | 24-5-30 to 2-12-30 |
| W. H. Smith | Medical Officer, as Acting Deputy Director of Sanitary Services | 24-5-30 to 6-10-30 |
| Miss M. K. O'Shea | Nursing Sister, as Acting Matron | 14-7-30 ,, 19-10-30 |
| TRANSFERS. | | |
| *(a)* Europeans. | | |
| T. A. Austin | Medical Officer, to Nyasaland | 11-8-30 |
| H. G. Wiltshire | ,, ,, from ,, | 2-10-30 |
| A. C. Freeth | ,, ,, ,, Uganda | 19-12-30 |
| RETIREMENTS. | | |
| *(a)* Europeans. | | |
| T. A. Jermy | Medical Officer | 28-6-30 |
| Miss I. Pegg | Matron | 16-10-30 |
| ,, Cameron | Nursing Sister | 10-2-30 |
| ,, Bennett | ,, | 6-7-30 |
| ,, Miles | ,, | 22-12-30 |
| *(b)* Asiatics. | | |
| S. Livingstone | Dispenser | 31-12-30 |
| C. M. Noronha | Sanitary Inspector | 30-6-30 |
| F. de Souza | ,, ,, | 7-9-30 |
| L. A. Vaz | Dispenser | 9-3-30 |
| LEAVE. | | |
| *(a)* Europeans. | | |
| J. A. Taylor | Director of Medical & Sanitary Services | 23-5-30 to 3-12-30 |
| S. M. Vassallo | Resident Surgical Officer | 9-4-30 ,, 26-10-30 |
| W. A. Young | Medical Officer | 7-11-30 ,, 31-12-30 |
| W. H. Smith | ,, ,, | 7-10-30 ,, 31-12-30 |
| H. O. W. Pitchford | ,, ,, | 1-1-30 ,, 15-5-30 |
| J. M. Semple | ,, ,, | 1-1-30 ,, 20-5-30 |
| H. G. Wiltshire | ,, ,, | 2-10-30 ,, 29-10-30 |
| J. A. Jermy | ,, ,, | 17-5-30 ,, 25-8-30 |
| A. C. Freeth | ,, ,, | 19-12-30 ,, 31-12-30 |
| Miss I. Pegg | Matron | 14-7-30 ,, 16-10-30 |
| ,, M. A. McKie | Nursing Sister | 3-3-30 ,, 1-10-30 |
| ,, A. Miles | ,, ,, | 22-9-30 ,, 22-12-30 |
| ,, K. Cameron | ,, ,, | 1-1-30 ,, 10-2-30 |
| ,, E. Bennett | ,, ,, | 28-3-30 ,, 6-7-30 |
| J. E. Harmston | Accountant and Storekeeper | 1-4-30 ,, 26-10-30 |
| P. Cairns | Sanitary Superintendent | 1-7-30 ,, 31-12-30 |
| *(b)* Asiatics. | | |
| M. L. Metha | Sub-Assistant Surgeon | 9-6-30 ,, 30-11-30 |
| Dinanath Koura | ,, ,, | 1-1-30 ,, 1-4-30 |
| R. C. Sood | ,, ,, | 5-2-30 ,, 30-6-30 |
| T. B. Dev | ,, ,, | 29-9-30 ,, 31-12-30 |
| C. D. Rana | ,, ,, | 1-1-30 ,, 26-1-30 |
| A. J. Rawal | Dispenser | 8-1-30 ,, 30-6-30 |
| M. da Silva | ,, | 22-4-30 ,, 20-10-30 |
| L. A. Vaz | ,, | 1-1-30 ,, 9-3-30 |
| S. Livingstone | ,, (Native) | 12-5-30 ,, 8-9-30 |
| S. M. Khan | Veterinary Officer | 24-11-30 ,, 31-12-30 |
| M. R. Dar | ,, ,, | 8-1-30 ,, 5-5-30 |
| I. B. Martin | Chief Clerk | 1-1-30 ,, 22-3-30 |
| F. de Souza | Inspector | 22-3-30 ,, 7-9-30 |

## TABLE II.

### Financial.

(A) EXPENDITURE :—

| | | |
|---|---|---|
| *Personal Emoluments* :— | | £ |
| Salaries and Allowances | | 37,859 |
| *Other Charges* :— | £ | |
| Books and Periodicals | 28 | |
| Staff Clothing and Uniforms | 128 | |
| Light and Power | 450 | |
| Fuel | 158 | |
| Incidental Expenses | 65 | |
| Subsistence of H. Patients | 1,643 | |
| Drugs and S. Requisites | 2,007 | |
| Fuel for Motor Boat | 44 | |
| Subsistence of Lepers | 1,091 | |
| Passages | 2,735 | |
| Purchase of Opium | 60 | |
| Transport Allowances | 279 | |
| Travelling Allowances | 79 | |
| Transport Expenses | 448 | |
| Fuel for Motor Vehicles | 41 | |
| Repairs to T. Vehicles | 122 | |
| Burial of Destitutes | 10 | |
| General Stores | 1,324 | |
| | | 10,712 |
| *Special Expenditure* :— | | |
| Courses of Instruction to Staff | 366 | |
| Anti-endemic Measures | 181 | |
| Electrical Equipment of H. Kitchen | 174 | |
| X-ray Equipment | 190 | |
| Furniture | 67 | |
| Clayton Machine Spares | 26 | |
| Gynæcological Equipment | 103 | |
| Electric Bell Installation | 11 | |
| Eye Clinic | 97 | |
| Suppression of E. Disease | 702 | |
| | | 1,917 |
| Total Expenditure | | 50,488 |

(B) REVENUE :—

| | |
|---|---|
| Hospital Fees and Sale of Drugs, etc. | 1,290 |
| Contribution from neighbouring dependencies for Quarantine Services | 2,637 |
| | 3,927 |

## TABLE III.

(1) Return of Statistics of Population for the year (the figures for the most part are only rough estimates): — — —

| | |
|---|---|
| Number of inhabitants end of 1929 | 217,311 |
| Number of births during 1930 | 3,641 |
| Number of deaths during 1930 | 4,151 |
| Excess of emigrants during 1930 | unknown |
| Number of inhabitants end of 1930 | 216,801 |
| Decrease during 1930 | 510 |

(2) Births registered in the Island of Zanzibar, 1922-1930 :—

| | 1922. | 1923. | 1924. | 1925. | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|---|---|---|---|
| Town Area | 481 | 413 | 501 | 424 | 437 | 471 | 526 | 591 | 603 |
| Northern District | 1,090 | 785 | 1,064 | 1,073 | 846 | 1,102 | 916 | 960 | 820 |
| Southern District | 1,087 | 837 | 1,069 | 849 | 915 | 1,033 | 1,088 | 975 | 742 |
| Totals | 2,658 | 2,035 | 2,634 | 2,346 | 2,198 | 2,606 | 2,530 | 2,526 | 2,165 |

(3) Deaths registered in the Island of Zanzibar, 1922-1930:—

| | 1922. | 1923. | 1924. | 1925. | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|---|---|---|---|
| Town Area | 1,262 | 1,258 | 1,043 | 1.379 | 1,560 | 1,097 | 1,093 | 920 | 1,117 |
| Northern District | 888 | 1,009 | 749 | 854 | 799 | 658 | 788 | 707 | 680 |
| Southern District | 1,307 | 1,187 | 1,040 | 1,146 | 1,473 | 1,170 | 1,240 | 1,083 | 1,191 |
| Totals | 3,457 | 3,454 | 2,832 | 3,379 | 3,832 | 2,925 | 3,121 | 2,710 | 2,988 |

(4) Comparative Statement of Births and Deaths registered in the Island of Zanzibar, 1922-1930:—

| | 1922. | 1923. | 1924. | 1925. | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|---|---|---|---|
| *Town Area—* | | | | | | | | | |
| Births | 481 | 413 | 501 | 424 | 437 | 471 | 526 | 591 | 603 |
| Deaths | 1,262 | 1,258 | 1,043 | 1,379 | 1,560 | 1,097 | 1,093 | 920 | 1,117 |
| *District—* | | | | | | | | | |
| Births | 2,177 | 1,622 | 2,133 | 1,922 | 1,761 | 2,135 | 2,004 | 1,935 | 1,562 |
| Deaths | 2,195 | 2,196 | 1,789 | 2,000 | 2,272 | 1,828 | 2,028 | 1,790 | 1,871 |
| Total— | | | | | | | | | |
| Births | 2,658 | 2,035 | 2,634 | 2,346 | 2,198 | 2,606 | 2,530 | 2,526 | 2,165 |
| Deaths | 3,457 | 3,454 | 2,832 | 3,379 | 3,832 | 2,925 | 3,121 | 2,710 | 2,988 |

(5) Comparative Statement of Births and Deaths registered in the Island of Pemba, 1922-1930:—

*District* :

| | 1922. | 1923. | 1924. | 1925. | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|---|---|---|---|
| Chake Chake— | | | | | | | | | |
| Births | 625 | 485 | 565 | 860 | 689 | 1,047 | 693 | 648 | 690 |
| Deaths | 328 | 366 | 476 | 446 | 377 | 422 | 437 | 420 | 444 |
| Wete— | | | | | | | | | |
| Births | 467 | 350 | 376 | 419 | 517 | 699 | 628 | 459 | 381 |
| Deaths | 491 | 621 | 461 | 441 | 491 | 530 | 454 | 462 | 399 |
| Mkoani— | | | | | | | | | |
| Births | 575 | 319 | 340 | 749 | 426 | 406 | 385 | 571 | 405 |
| Deaths | 397 | 302 | 342 | 307 | 317 | 251 | 290 | 301 | 320 |
| Total— | | | | | | | | | |
| Births | 1,667 | 1,154 | 1,281 | 2,028 | 1,632 | 2,152 | 1,706 | 1,678 | 1,476 |
| Deaths | 1,216 | 1,289 | 1,279 | 1,194 | 1,185 | 1,203 | 1,181 | 1,183 | 1,163 |

(6) Comparative Statement of Births and Deaths registered in the Zanzibar Protectorate 1922--1930:—

| | 1922. | 1923. | 1924. | 1925. | 1926. | 1927. | 1928. | 1929. | 1930. |
|---|---|---|---|---|---|---|---|---|---|
| *Zanzibar Island* : | | | | | | | | | |
| Births | 2,658 | 2,035 | 2,634 | 2,346 | 2,198 | 2,606 | 2,530 | 2,526 | 2,165 |
| Deaths | 3,457 | 3,454 | 2,832 | 3,379 | 3,832 | 2,925 | 3,121 | 2,710 | 2,988 |
| *Pemba Island* : | | | | | | | | | |
| Births | 1,667 | 1,154 | 1,281 | 2,028 | 1,632 | 2,152 | 1,706 | 1,678 | 1,476 |
| Deaths | 1,216 | 1,289 | 1,279 | 1,194 | 1,185 | 1,203 | 1.181 | 1,183 | 1,163 |
| Total— | | | | | | | | | |
| Births | 4,325 | 3,189 | 3,915 | 4,374 | 3,830 | 4,758 | 4,236 | 4.204 | 3,641 |
| Deaths | 4,673 | 4,743 | 4,111 | 4,573 | 5,017 | 4,128 | 4,302 | 3,893 | 4,151 |
| Excess of deaths over birth | 348 | 1,554 | 196 | 199 | 1,187 | — | 66 | — | 510 |
| Excess of births over deaths | — | — | — | — | — | 630 | — | 311 | — |

(7) Births in Zanzibar Township during the year 1930:—

(*a*) Total number—657.

| | |
|---|---|
| Births, live | 603 |
| Births, still-born | 54 |
| Total | 657 |

(*b*) Sex of live births—

| | |
|---|---|
| Males | 313 |
| Females | 290 |
| Total | 603 |

(*c*) Nationality of live births—

| | |
|---|---|
| Europeans | 10 |
| Arabs | 77 |
| Asiatics (excluding Arabs) | 372 |
| Africans | 144 |
| Total | 603 |

(8) Deaths in Zanzibar Township during the year 1930:—

(*a* Total number—1,117.

(*b*) Sex—

| | |
|---|---|
| Male | 591 |
| Females | 526 |
| Total | 1,117 |

(*c*) Nationality—

| | |
|---|---|
| Europeans | 2 |
| Arabs | 130 |
| Asiatic (excluding Arabs) | 207 |
| Africans | 778 |
| Total | 1,117 |

(9) Return of Causes of Deaths in Zanzibar Town during 1930:—

I. *Epidemic, Endemic and Infectious Diseases*:

| Diseases. | No. |
|---|---|
| Paratyphoid Fever B. | 1 |
| Malaria | 138 |
| Blackwater | 2 |
| Small-pox | 5 |
| Measles | 2 |
| Dysentery | 10 |
| Acute Poliomyelitis | 2 |
| Tuberculosis, Pulmonary | 88 |
| Tuberculosis of Other Organs | 3 |
| Syphilis | 3 |
| Gonorrhœa | 2 |
| Septicæmia | 13 |
| Pyæmia | 3 |
| Filariasis | 2 |

II. *General Diseases not mentioned above* :

| | |
|---|---|
| Cancer | 7 |
| Tumours (non-malignant) | 1 |
| Acute Rheumatism | 1 |
| Arthritis chronic | 2 |
| Beri-Beri | 1 |
| Rickets | 1 |
| Diabetes | 5 |
| Anæmia | 2 |
| Rupture of Spleen | 2 |
| Toxæmia | 5 |

III. *Affections of the Nervous System and Organs of the Senses* :

| | |
|---|---|
| Meningitis | 6 |
| Locomotor Ataxia | 2 |
| Myelitis | 1 |
| Apoplexy | 27 |
| Mental Alienation | 8 |
| Epilepsy | 3 |
| Infantile Convulsions | 31 |

IV. *Affections of the Circulatory System* :

| | |
|---|---|
| Angina Pectoris | 3 |
| Valvular Disease of the Heart | 6 |
| Myocarditis | 16 |

V. *Affections of the Respiratory System* :

| | |
|---|---|
| Laryngitis | 1 |
| Acute Bronchitis | 12 |
| Chronic Bronchitis | 45 |
| Broncho-Pneumonia | 17 |
| Pneumonia | 29 |
| Asthma | 2 |

VI. *Disease of the Digestive System* :

| | |
|---|---|
| Ulcer of the Duodenum | 1 |
| Diarrhœa and Enteritis—Under two years | 3 |
| Diarrhœa and Enteritis—Two years and over | 8 |
| Gastro-enteritis | 2 |
| Colitis | 1 |
| Sprue | 1 |
| Ankylostomiasis | 131 |
| Appendix abscess | 1 |
| Hernia | 6 |
| Intestinal Hæmorrhage | 4 |
| Intestinal Obstruction | 2 |
| Cirrhosis of the Liver | 2 |
| Cholecystitis | 1 |

VII. *Diseases of the Genito-Urinary System (non--venereal)* :

| | |
|---|---|
| Acute Nephritis | 7 |
| Chronic Nephritis | 6 |
| Schistosomiasis | 1 |
| Pyelonephritis | 1 |
| Uræmia | 2 |
| Ovarian Cyst | 1 |
| Salpingitis | 1 |

| | | |
|---|---|---|
| VIII. | *Puerperal State :* | |
| | Delayed Labour | 3 |
| | Abortion | 1 |
| | Septicæmia | 3 |
| | Eclampsia | 1 |
| IX. | *Affections of the Skin and Cellular Tissues :* | |
| | Gangrene | 11 |
| | Cellulitis | 1 |
| | Elephantiasis | 2 |
| XI. | *Diseases of Infancy :* | |
| | Congenital Debility | 8 |
| | Premature Birth | 9 |
| | Asphyxia Neonatorum | 1 |
| XIII. | *Affections of Old Age :* | |
| | Senility | 334 |
| | Senile Dementia | 3 |
| XIV. | *Affections Produced by External Causes :* | |
| | Accidental Poisoning | 1 |
| | Burns | 3 |
| | Drowning | 3 |
| | Fractures | 2 |
| | External Injuries | 6 |
| | Suicide | 4 |
| | Murder | 4 |
| XV. | *Ill-defined Diseases :* | |
| | Post-operative Shock | 8 |
| | Hyperpyrexia | 4 |
| | General Debiilty | 10 |
| | Sudden Death (cause unknown) | 3 |
| | | 1,117 |

## Table IV.

### *Meteorological Return.*

The following is a brief summary of the more important meteorological returns available for the past year as compared with the mean for the years 1892-1929 in the case of Zanzibar and the mean for the years 1899-1929 in the case of Pemba.

| | Zanzibar (Town). | | Pemba (Banani). | |
|---|---|---|---|---|
| Air temperature | 1892-1929. | 1930. | 1899-1929. | 1930. |
| Mean of daily maxima | 84.5 | 84.3 | 86.6 | 85.9 |
| Mean of daily minima | 76.5 | 76.5 | 76.2 | 77.4 |
| Mean of daily range | 8.0 | 7.8 | 10.2 | 8.5 |
| Mean | 80.5 | 80.4 | 81.4 | 81.6 |
| Rainfall (inches) | 60.5 | 66.27 | 80.3 | 61.25 |
| Rainy days | 103 | 116 | 164 | 154 |

## Tables V. and VI.

Return of Diseases and Deaths (In-Patients) and of Diseases (Out-Patients) for the year 1930.

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total, | | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| | | Admitted. | Deaths. | | | | | |
| I. EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES. | | | | | | | | |
| 1 Enteric Group— | | | | | | | | |
| (*a*) Typhoid Fever .. | .. | 7 | .. | 7 | .. | 8 | 2 | 10 |
| (*b*) Paratyphoid A .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*c*) Paratyphoid B .. | .. | 5 | .. | 5 | .. | 5 | 1 | 6 |
| (*d*) Type not defined .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 2 Typhus .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 3 Relapsing Fever .. | .. | 1 | .. | 1 | .. | 1 | .. | 1 |
| 4 Undulant Fever .. | .. | 1 | .. | 1 | .. | 1 | .. | 1 |
| 5 Malaria— | | | | | | | | |
| (*a*) Tertian .. | 2 | 120 | .. | 122 | 2 | 1,006 | 359 | 1,365 |
| (*b*) Quartan .. .. | .. | .. | .. | .. | .. | 7 | 4 | 11 |
| (*c*) Aestivo-autumnal .. | 1 | 30 | 3 | 31 | .. | 156 | 49 | 205 |
| (*d*) Cachexia .. .. | 1 | 14 | 3 | 15 | 2 | 984 | 826 | 1,810 |
| (*e*) Blackwater .. .. | .. | 5 | 2 | 5 | .. | 7 | 1 | 8 |
| (*f*) Type not defined .. | .. | 71 | 1 | 71 | .. | 3,452 | 2,142 | 5,594 |
| 6 Small-pox .. .. | .. | 28 | 5 | 28 | .. | 29 | 23 | 52 |
| 7 Measles .. .. .. | .. | 11 | .. | 11 | .. | 22 | 8 | 30 |
| 8 Scarlet Fever .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 9 Whooping Cough .. | .. | .. | .. | .. | .. | 84 | 76 | 160 |
| 10 Diphtheria .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 11 Influenza .. .. | 3 | 32 | .. | 35 | 2 | 1,241 | 349 | 1,590 |
| 12 Miliary Fever .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 13 Mumps .. .. | .. | .. | .. | .. | .. | 48 | 19 | 67 |
| 14 Cholera .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 15 Epidemic diarrhœa .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 16 Dysentery— | | | | | | | | |
| (*a*) Amœbic .. .. | .. | .. | .. | .. | .. | 5 | 1 | 6 |
| (*b*) Bacillary .. .. | 3 | 47 | 6 | 50 | 1 | 54 | 7 | 61 |
| (*c*) Undefined or due to other causes .. .. | .. | 55 | 3 | 55 | 4 | 66 | 23 | 89 |
| 17 Plague .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 18 Yellow Fever .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 19 Spirochætosis ictero-hæmorrhagica .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 20 Leprosy .. .. | 10 | 46 | 2 | 56 | 22 | 42 | 26 | 68 |
| 21 Erysipelas .. .. | .. | 2 | .. | 2 | .. | 2 | .. | 2 |
| 22 Acute Poliomyelitis .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 23 Encephalitis Lethargica .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 24 Epidemic Cerebro-spinal Fever .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 25 Other Epidemic Diseases— | | | | | | | | |
| (*a*) Rubella (German Measles) .. .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| (*b*) Varicella (Chicken-pox). | 2 | 24 | .. | 26 | .. | 44 | 3 | 47 |
| (*c*) Kala-azar .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*d*) Phlebotomus Fever .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*e*) Dengue .. .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| (*f*) Epidemic Dropsy .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*g*) Yaws .. .. | 1 | 19 | .. | 20 | .. | 3,634 | 1,817 | 5,451 |
| (*h*) Trypanosomiasis .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Carried forward .. | 23 | 518 | 25 | 541 | 33 | 10,899 | 5,738 | 16,637 |

## TABLES V. AND VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total Admitted | Yearly Total Deaths. | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| Brought forward .. | 23 | 518 | 25 | 541 | 33 | 10,899 | 5,738 | 16,637 |
| I. EPIDEMIC, ENDEMIC AND INFECTIOUS DISEASES—(*Contd*). | | | | | | | | |
| 26 Glanders .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 27 Anthrax .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 28 Rabies .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 29 Tetanus .. .. | .. | 1 | .. | 1 | .. | 2 | .. | 2 |
| 30 Mycosis .. .. | .. | 4 | .. | 4 | .. | 3 | 3 | 6 |
| 31 Tuberculosis, Pulmonary and Laryngeal .. .. | 12 | 109 | 40 | 121 | 9 | 182 | 39 | 221 |
| 32 Tuberculosis of the Meninges or Central Nervous System .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 33 Tuberculosis of the Intestines or Peritoneum .. | .. | 3 | 1 | 3 | .. | 3 | .. | 3 |
| 34 Tuberculosis of the Vertebral Column .. | .. | 2 | .. | 2 | .. | 2 | .. | 2 |
| 35 Tuberculosis of Bones and Joints .. .. | 3 | 3 | .. | 6 | 1 | 4 | 5 | 9 |
| 36 Tuberculosis of other Organs— | | | | | | | | |
| (*a*) Skin or Subcutaneous Tissue (Lupus) .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*b*) Lymphatic system .. | .. | 2 | .. | 2 | 1 | 2 | .. | 2 |
| (*c*) Genito-urinary System.. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*d*) Other organs .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 37 Tuberculosis disseminated— | | | | | | | | |
| (*a*) Acute .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*b*) Chronic .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 38 Syphilis— | | | | | | | | |
| (*a*) Primary .. .. | | 7 | 1 | 7 | .. | 137 | 65 | 202 |
| (*b*) Secondary .. .. | 2 | 24 | 1 | 26 | .. | 208 | 128 | 336 |
| (*c*) Tertiary .. .. | 5 | 31 | 2 | 36 | 1 | 132 | 63 | 195 |
| (*d*) Hereditary .. .. | .. | .. | .. | .. | .. | 10 | 11 | 21 |
| (*e*) Period not indicated .. | 2 | 1 | .. | 3 | .. | 48 | 16 | 64 |
| 39 Soft Chancre .. .. | .. | 3 | .. | 3 | .. | 114 | .. | 114 |
| 40 A.—Gonorrhœa and its complications .. .. | .. | 31 | 2 | 31 | 2 | 1,810 | 200 | 2,010 |
| B.—Gonorrhœal Ophthalmia | .. | 4 | .. | 4 | .. | 54 | 8 | 62 |
| C.—Gonorrhœal Arthritis .. | .. | 33 | .. | 33 | .. | 136 | 20 | 156 |
| D.—Granuloma Venereum.. | .. | .. | .. | .. | .. | .. | .. | .. |
| 41 Septicæmia .. .. | .. | 22 | 4 | 22 | 1 | 137 | 25 | 162 |
| 42 Other Infectious Diseases—Filariasis .. .. | .. | 73 | .. | 73 | 7 | 251 | 49 | 300 |
| II. GENERAL DISEASES NOT MENTIONED ABOVE. | | | | | | | | |
| 43 Cancer or other malignant Tumours of the Buccal Cavity .. .. | .. | 6 | 1 | 6 | 1 | 5 | 1 | 6 |
| 44 Cancer or other malignant Tumours of the Stomach or Liver .. .. | .. | 4 | 1 | 4 | 1 | 4 | 4 | 8 |
| 45 Cancer or other malignant Tumours of the Peritoneum, Intestines and Rectum .. .. | .. | 3 | .. | 3 | .. | 2 | 1 | 3 |
| Carried forward .. | 47 | 884 | 78 | 931 | 57 | 14,145 | 6,376 | 20,521 |

TABLES V. AND VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total | | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| | | Admitted. | Deaths. | | | | | |
| Brought forward .. | 47 | 884 | 78 | 931 | 57 | 14,145 | 6,376 | 20,521 |
| II. GENERAL DISEASES NOT MENTIONED ABOVE—*(Continued)*. | | | | | | | | |
| 46 Cancer or other malignant Tumours of the Female Genital Organs .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 47 Cancer or other malignant Tumours of the Breast .. | 1 | 2 | .. | 3 | .. | .. | 2 | 2 |
| 48 Cancer or other malignant Tumours of the Skin .. | .. | 4 | 1 | 4 | 2 | 7 | .. | 7 |
| 49 Cancer or other malignant Tumours of organs not specified .. .. | .. | 2 | 1 | 2 | .. | 2 | .. | 2 |
| 50 Tumours non-Malignant .. | .. | 41 | .. | 41 | 4 | 87 | 28 | 115 |
| 51 Acute Rheumatism .. | .. | 2 | .. | 2 | .. | 110 | 64 | 174 |
| 52 Chronic Rheumatism .. | 1 | 13 | .. | 14 | .. | 934 | 714 | 1,648 |
| 53 Scurvy (including Barlow's Disease) .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 54 Pellagra .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 55 Beri-Beri .. | .. | 5 | .. | 5 | .. | 5 | 3 | 8 |
| 56 Rickets .. | .. | .. | .. | .. | .. | 4 | 1 | 5 |
| 57 Diabetes (not including Insipidus) .. .. | .. | 1 | .. | 1 | 1 | 23 | 7 | 30 |
| 58 Anæmia— | | | | | | | | |
| (*a*) Pernicious .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| (*b*) Other Anæmias and Chlorosis .. | 1 | 2 | .. | 3 | .. | 292 | 220 | 512 |
| 59 Diseases of the Pituitary Body | .. | .. | .. | .. | .. | .. | .. | .. |
| 60 Diseases of the Thyroid Gland— | | | | | | | | |
| (*a*) Exophthalmic Goitre .. | .. | .. | .. | .. | .. | 1 | 1 | 2 |
| (*b*) Other Diseases of the Thyroid Gland, Myxoedema .. .. | .. | .. | .. | .. | .. | 1 | 7 | 8 |
| 61 Diseases of the Para-Thyroid Glands .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 62 Diseases of the Thymus .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 63 Diseases of the Supra Renal Glands .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 64 Diseases of the Spleen .. | .. | 3 | .. | 3 | .. | 296 | 217 | 513 |
| 65 Leukæmia— | | | | | | | | |
| (*a*) Leukæmia .. .. | .. | 1 | .. | 1 | 1 | .. | 1 | 1 |
| (*b*) Hodgkin's Disease .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| 66 Alcoholism .. .. | .. | 2 | .. | 2 | .. | 2 | .. | 2 |
| 67 Chronic poisoning by mineral Substances (lead, mercury, etc.) .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 68 Chronic poisoning by organic substances (Morphia, Cocaine etc.) .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| 69 Other General Diseases—Toxæmia .. .. | .. | 9 | 5 | 9 | .. | 9 | 6 | 15 |
| III. AFFECTIONS OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES. | | | | | | | | |
| 70 Encephalitis (not including Encephalitis Lethargica).. | .. | 3 | .. | 3 | .. | 3 | .. | 3 |
| Carried forward .. | 50 | 974 | 85 | 1,024 | 65 | 15,924 | 7,648 | 23,572 |

## TABLES V. AND VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total Admitted. | Yearly Total Deaths. | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| Brought forward .. | 50 | 974 | 85 | 1,024 | 65 | 15,924 | 7,648 | 23,572 |
| III. AFFECTION OF THE NERVOUS SYSTEM AND ORGANS OF THE SENSES—(*Continued*). | | | | | | | | |
| 71 Meningitis (not including Tuberculous Meningitis or Cerebro-Spinal Meningitis) .. .. | .. | 4 | 3 | 4 | .. | 5 | 2 | 7 |
| 72 Locomotor Ataxia .. | .. | 24 | 2 | 24 | .. | 28 | 2 | 30 |
| 73 Other Diseases of the Spinal Cord .. .. | 3 | 11 | 1 | 14 | 5 | 14 | 2 | 16 |
| 74 Apoplexy— | | | | | | | | |
| (*a*) Hæmorrhage .. | 1 | 6 | 5 | 7 | .. | 5 | 4 | 9 |
| (*b*) Embolism .. | .. | 1 | .. | 1 | .. | 1 | .. | 1 |
| (*c*) Thrombosis .. | .. | 4 | 1 | 4 | .. | 4 | 2 | 6 |
| 75 Paralysis— | | | | | | | | |
| (*a*) Hemiplegia .. | 1 | 4 | .. | 5 | 2 | 10 | 6 | 16 |
| (*b*) Other Paralysis .. | 6 | 18 | 11 | 24 | 9 | 43 | 33 | 76 |
| 76 General Paralysis of the Insane .. .. | .. | 1 | 1 | 1 | .. | 1 | .. | 1 |
| 77 Other forms of Mental Alienation .. .. | .. | 8 | .. | 8 | 2 | 8 | 5 | 13 |
| 78 Epilepsy .. .. | 2 | 11 | 1 | 13 | 1 | 20 | 1 | 21 |
| 79 Eclampsia, Convulsions (non-puerperal) 5 years or over. | .. | .. | .. | .. | .. | .. | .. | .. |
| 80 Infantile Convulsions .. | .. | .. | .. | .. | .. | 4 | 1 | 5 |
| 81 Chorea .. .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| 82 A.—Hysteria .. .. | .. | 3 | .. | 3 | .. | 4 | 5 | 9 |
| B.—Neuritis .. .. | .. | 5 | .. | 5 | .. | 213 | 192 | 405 |
| C.—Neurasthenia .. | .. | 4 | .. | 4 | .. | 20 | 14 | 34 |
| 83 Cerebral Softening .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 84 Other affections of the Nervous System .. | .. | 12 | .. | 12 | .. | 2,049 | 695 | 2,744 |
| 85 Affections of the Organs of Vision— | | | | | | | | |
| Conjunctivitis .. | .. | 23 | .. | 23 | 4 | 1,330 | 496 | 1,826 |
| Tumours of the Eye .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Other affections of the Eye. | 5 | 58 | .. | 63 | 5 | 1,632 | 965 | 2,597 |
| 86 Affections of the Ear or Mastoid Sinus .. | .. | 10 | .. | 10 | .. | 1,436 | 709 | 2,145 |
| IV. AFFECTIONS OF THE CIRCULATORY SYSTEM. | | | | | | | | |
| 87 Pericarditis .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 88 Acute Endocarditis or Myocarditis .. .. | .. | 1 | 1 | 1 | .. | 2 | .. | 2 |
| 89 Angina Pectoris .. | .. | .. | .. | ... | .. | .. | 1 | 1 |
| 90 Other Diseases of the Heart | | | | | | | | |
| (*a*) Valvular— | | | | | | | | |
| Mitral .. .. | 1 | 8 | .. | 9 | .. | 25 | 7 | 32 |
| Aortic .. .. | .. | 3 | 1 | 3 | .. | 3 | .. | 3 |
| Tricuspid .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Pulmonary .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*b*) Myocarditis.. .. | 2 | 22 | 12 | 24 | 1 | 30 | 8 | 38 |
| (*c*) Other Diseases .. | .. | 2 | .. | 2 | .. | 9 | 8 | 17 |
| Carried forward .. | 71 | 1,217 | 124 | 1,288 | 94 | 22,821 | 10,807 | 33,628 |

## TABLES V. AND VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total Admitted. | Yearly Total Deaths. | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| Brought forward .. | 71 | 1,217 | 124 | 1,288 | 94 | 22,821 | 10,807 | 33,628 |
| IV. AFFECTION OF THE CIRCULATORY SYSTEM—(*Continued*). | | | | | | | | |
| 91 Diseases of the Arteries— | | | | | | | | |
| (*a*) Aneurism .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| (*b*) Arterio-Sclerosis .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 92 Embolism or Thrombosis (non-cerebral) .. | .. | 1 | 1 | 1 | .. | .. | 1 | 1 |
| 93 Diseases of the Veins— | | | | | | | | |
| Hæmorrhoids .. | 2 | 53 | .. | 55 | 2 | 126 | 47 | 173 |
| Varicose Veins .. | 1 | 4 | .. | 5 | .. | 18 | 5 | 23 |
| Phlebitis .. .. | .. | 1 | .. | 1 | .. | 13 | 4 | 17 |
| 94 Diseases of the Lymphatic System— | | | | | | | | |
| Lymphangitis .. .. | .. | 10 | .. | 10 | .. | 109 | 15 | 124 |
| Lymphadenitis, Bubo (non-specific) .. .. | .. | 62 | .. | 62 | 4 | 386 | 46 | 432 |
| 95 Hæmorrhage of undetermined cause .. .. | .. | .. | .. | .. | .. | 8 | 2 | 10 |
| 96 Other affections of the Circulatory System .. | .. | .. | .. | .. | .. | 4 | .. | 4 |
| V. AFFECTIONS OF THE RESPIRATORY SYSTEM. | | | | | | | | |
| 97 Diseases of the Nasal Passages— | | | | | | | | |
| Adenoids .. .. | .. | .. | .. | .. | .. | 2 | 1 | 3 |
| Polypus .. .. | .. | .. | .. | .. | .. | 7 | 13 | 20 |
| Rhinitis .. .. | .. | .. | .. | .. | .. | 36 | 26 | 62 |
| Coryza .. .. | .. | 1 | .. | 1 | .. | 1,249 | 2 4 | 1,453 |
| Other Diseases .. | .. | 2 | .. | 2 | .. | 3 | 6 | 9 |
| 98 Affections of the Larynx— | | | | | | | | |
| Laryngitis .. .. | .. | 6 | .. | 6 | .. | 44 | 21 | 65 |
| 99 Bronchitis— | | | | | | | | |
| (*a*) Acute .. .. | 1 | 61 | .. | 62 | 2 | 5,737 | 2,769 | 8,506 |
| (*b*) Chronic .. .. | .. | 21 | 4 | 21 | .. | 754 | 435 | 1,189 |
| 100 Broncho-Pneumonia .. | 6 | 29 | 6 | 35 | .. | 47 | 13 | 60 |
| 101 Pneumonia— | | | | | | | | |
| (*a*) Lobar .. .. | 5 | 61 | 8 | 66 | 5 | 63 | 6 | 69 |
| (*b*) Unclassified .. | .. | 13 | 3 | 13 | 1 | 28 | 15 | 43 |
| 102 Pleurisy, Empyema .. | 4 | 21 | .. | 25 | 1 | 68 | 34 | 102 |
| 103 Congestion of the Lungs .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 104 Gangrene of the Lungs .. | .. | 1 | 1 | 1 | .. | .. | 1 | 1 |
| 105 Asthma .. .. | 1 | 12 | 1 | 13 | .. | 378 | 283 | 661 |
| 106 Pulmonary Emphysema .. | .. | 1 | 1 | 1 | .. | 1 | .. | 1 |
| 107 Other affections of the Lungs | 1 | .. | .. | 1 | .. | 13 | 6 | 19 |
| VI. DISEASES OF THE DIGESTIVE SYSTEM. | | | | | | | | |
| 108 A.—Diseases of Teeth or Gums— | | | | | | | | |
| Caries, Pyorrhœa, etc. .. | .. | 4 | .. | 4 | .. | 3,952 | 1,691 | 5,643 |
| B.—Other affections of the Mouth .. .. | .. | 5 | .. | 5 | .. | 255 | 136 | 391 |
| Carried forward .. | 92 | 1,586 | 149 | 1,678 | 109 | 36,123 | 16,587 | 52,710 |

## TABLES V. AND VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total | | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| | | Admitted. | Deaths. | | | | | |
| Brought forward .. | 92 | 1 586 | 149 | 1.678 | 109 | 36,123 | 16,587 | 52,710 |
| VI. DISEASES OF THE DIGESTIVE SYSTEM—(*Continued*). | | | | | | | | |
| 109 Affections of the Pharynx or Tonsils— | | | | | | | | |
| Tonsillitis .. .. | .. | 10 | .. | 10 | .. | 317 | 151 | 468 |
| Pharyngitis .. .. | .. | 7 | .. | 7 | .. | 578 | 171 | 749 |
| 110 Affections of the Oesophagus | .. | 1 | .. | 1 | .. | 2 | | 2 |
| 111 A.—Ulcer of the Stomach .. | .. | 3 | .. | 3 | .. | 3 | .. | 3 |
| B.—Ulcer of the Duodenum | .. | 4 | 1 | 4 | .. | 11 | 2 | 13 |
| 112 Other affections of the Stomach— | | | | | | | | |
| Gastritis .. .. | .. | 2 | .. | 2 | .. | 109 | 76 | 185 |
| Dyspepsia, etc. .. | .. | 7 | .. | 7 | 2 | 864 | 547 | 1,411 |
| 113 Diarrhœa and Enteritis— | | | | | | | | |
| Under two years .. | .. | 33 | 3 | 33 | .. | 215 | 76 | 291 |
| 114 Diarrhœa and Enteritis— | | | | | | | | |
| Two years and over .. | .. | 28 | 1 | 28 | .. | 1,909 | 665 | 2,574 |
| Colitis .. .. | .. | 3 | 1 | 3 | .. | 26 | 6 | 32 |
| Ulceration .. .. | .. | .. | .. | .. | .. | 3 | .. | 3 |
| 114a Sprue .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 115 Ankylostomiasis .. | 14 | 202 | 18 | 216 | 16 | 8,521 | 5,566 | 14,087 |
| 116 Diseases due to Intestinal Parasites— | | | | | | | | |
| Cestoda (Tænia) .. | .. | 1 | .. | 1 | .. | 7 | 1 | 8 |
| Nematoda (other than Ankylostoma)— | | | | | | | | |
| Ascaris .. .. | .. | 4 | .. | 4 | .. | 229 | 168 | 397 |
| Other parasites .. | .. | 2 | .. | 2 | .. | 15 | 5 | 20 |
| 117 Appendicitis .. .. | .. | 11 | 2 | 11 | 2 | 16 | 4 | 20 |
| 118 Hernia .. .. | 9 | 203 | 13 | 212 | 14 | 375 | 9 | 384 |
| 119 A.—Affections of the Anus, Fistula, etc. .. | 1 | 7 | .. | 8 | .. | 10 | 23 | 33 |
| 119 B.—Other affections of the Intestines .. .. | .. | 20 | 3 | 20 | .. | 9,472 | 5,488 | 14,960 |
| 120 Acute Yellow Atropy of the Liver .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 121 Hydatid of the Liver .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 122 Cirrhosis of the Liver— | | | | | | | | |
| (*a*) Alcoholic .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| (*b*) Other forms .. | .. | 5 | 2 | 5 | 1 | 8 | 2 | 10 |
| 123 Biliary Calculus .. | .. | 1 | .. | 1 | .. | 1 | 1 | 2 |
| 124 Other affections of the Liver— | | | | | | | | |
| Abscess .. .. | 1 | .. | .. | 1 | .. | 3 | 1 | 4 |
| Hepatitis .. .. | .. | 5 | .. | 5 | 2 | 75 | 21 | 96 |
| Cholecystitis .. .. | .. | 6 | 1 | 6 | .. | 11 | 4 | 15 |
| Jaundice .. .. | .. | 5 | 1 | 5 | .. | 58 | 18 | 76 |
| 125 Diseases of the Pancreas .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 126 Peritonitis (of unknown cause) .. .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| 127 Other affections of the Digestive System .. | .. | .. | .. | .. | .. | 35 | 21 | 56 |
| Carried forward ... | 117 | 2,156 | 195 | 2,273 | 146 | 58,997 | 29,613 | 88,610 |

## Tables V. and VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Yearly Total | | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| | | Admitted. | Deaths. | | | | | |
| Brought forward .. | 117 | 2,156 | 195 | 2,273 | 146 | 58,997 | 29,613 | 88,610 |
| VII. Diseases of the Genito-urinary System (non-Venereal). | | | | | | | | |
| 128 Acute Nephritis .. | .. | 7 | 3 | 7 | .. | 14 | 6 | 20 |
| 129 Chronic Nephritis .. | 1 | 22 | 9 | 23 | 4 | 34 | 60 | 94 |
| 130 A.—Chyluria .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 130 B.—Schistosomiasis .. | .. | 12 | .. | 12 | .. | 582 | 45 | 627 |
| 131 Other affections of the Kidneys— | | | | | | | | |
| Pyelitis, etc. .. .. | 1 | 4 | .. | 5 | 1 | 14 | 6 | 20 |
| 132 Urinary Calculus .. | .. | 3 | .. | 3 | .. | 4 | 2 | 6 |
| 133 Diseases of the Bladder— | | | | | | | | |
| Cystitis, etc. .. .. | 2 | 30 | 3 | 32 | .. | 147 | 43 | 190 |
| 134 Diseases of the Urethra— | | | | | | | | |
| (*a*) Stricture .. .. | .. | 8 | 1 | 8 | 1 | 73 | .. | 73 |
| (*b*) Other Diseases .. | 4 | 22 | 2 | 26 | 2 | 53 | 3 | 56 |
| 135 Diseases of the Prostate— | | | | | | | | |
| Hypertrophy .. .. | .. | 3 | .. | 3 | .. | 3 | .. | 3 |
| Prostatitis .. .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| 136 Diseases (non-Venereal) of the Genital Organs of Man— | | | | | | | | |
| Epididymitis .. .. | .. | 9 | 1 | 9 | .. | 55 | .. | 55 |
| Orchitis .. .. | 1 | 38 | .. | 39 | 1 | 515 | .. | 515 |
| Hydrocele .. .. | 5 | 163 | .. | 168 | 9 | 366 | .. | 366 |
| Ulcer of Penis .. .. | 2 | 15 | .. | 17 | 1 | 344 | .. | 344 |
| Phimosis .. .. | 7 | 58 | .. | 65 | 1 | 266 | .. | 266 |
| Para-phimosis .. .. | .. | 3 | .. | 3 | .. | 8 | .. | 8 |
| Other Diseases .. .. | .. | 3 | .. | 3 | .. | 8 | .. | 8 |
| 137 Cysts or other non-malignant Tumours of the Ovaries .. | .. | 6 | 1 | 6 | 1 | .. | 9 | 9 |
| 138 Salpingitis .. .. | .. | 5 | .. | 5 | 1 | .. | 45 | 45 |
| 139 Uterine Tumours (non-malignant) .. .. | 1 | 14 | .. | 15 | 1 | .. | 69 | 69 |
| 140 Uterine Hæmorrhage (non-puerperal) .. .. | .. | .. | .. | .. | .. | .. | 3 | 3 |
| 141 A.—Metritis .. .. | .. | 5 | .. | 5 | .. | .. | 54 | 54 |
| B.—Other affections of the Female Genital Organs— | | | | | | | | |
| Displacement of Uterus .. | .. | 3 | .. | 3 | .. | .. | 10 | 10 |
| Amenorrhœa .. .. | .. | .. | .. | .. | .. | .. | 329 | 329 |
| Dysmenorrhœa .. | .. | 3 | .. | 3 | .. | .. | 81 | 81 |
| Leucorrhœa .. .. | .. | .. | .. | .. | .. | .. | 18 | 18 |
| Other affections .. | .. | 4 | 1 | 4 | 1 | .. | 246 | 246 |
| 142 Diseases of the Breast (non-puerperal)— | | | | | | | | |
| Mastitis .. .. | .. | .. | .. | .. | .. | 1 | 56 | 57 |
| Abscess .. .. | .. | 4 | 2 | 4 | .. | .. | 19 | 19 |
| VIII. Puerperal State. | | | | | | | | |
| 143 A.—Normal Labour .. | 4 | 29 | .. | 33 | .. | .. | 37 | 37 |
| B.—Accidents of Pregnancy- | | | | | | | | |
| (*a*) Abortion .. .. | .. | 5 | .. | 5 | .. | .. | 9 | 9 |
| (*b*) Ectopic Gestation .. | .. | 1 | .. | 1 | .. | .. | 3 | 3 |
| (*c*) Other accidents of Pregnancy .. .. | .. | 2 | .. | 2 | 1 | .. | 64 | 64 |
| Carried forward .. | 145 | 2,637 | 218 | 2,782 | 171 | 61,485 | 30,830 | 92,315 |

## Tables V. and VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Y'ly. Total | | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| | | Admitted. | Deaths. | | | | | |
| Brought forward .. | 145 | 2,637 | 218 | 2,782 | 171 | 61,485 | 30,830 | 92,315 |
| VIII. Puerperal State--(*Cont*). | | | | | | | | |
| 144 Puerperal Hæmorrhage .. | .. | 1 | .. | 1 | .. | .. | 3 | 3 |
| 145 Other accidents of Parturition .. .. | .. | 3 | .. | 3 | 1 | .. | 8 | 8 |
| 146 Puerperal Septicæmia .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| 147 Phlegmasia Dolens .. | .. | 1 | .. | 1 | .. | .. | 1 | 1 |
| 148 Puerperal Eclampsia .. | .. | 3 | 2 | 3 | .. | .. | 5 | 5 |
| 149 Sequelæ of Labour .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| 150 Puerperal affections of the Breast .. .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| IX. Affections of the Skin and Cellular Tissues. | | | | | | | | |
| 151 Gangrene .. .. | 1 | 15 | 2 | 16 | 2 | 22 | 1 | 23 |
| 152 Boil .. .. .. | .. | .. | .. | .. | .. | 794 | 176 | 970 |
| Carbuncle .. .. | .. | 3 | .. | 3 | .. | 15 | 4 | 19 |
| 153 Abscess .. .. | 2 | 119 | 2 | 121 | 3 | 794 | 225 | 1,019 |
| Whitlow .. .. | .. | 7 | .. | 7 | 1 | 385 | 111 | 496 |
| Cellulitis .. .. | 4 | 51 | 2 | 55 | 1 | 540 | 130 | 670 |
| 154 A.—Tinea .. .. | .. | 2 | .. | 2 | .. | 748 | 267 | 1,015 |
| B.—Scabies .. .. | 1 | 4 | .. | 5 | .. | 5,035 | 2,504 | 7,539 |
| C.—Tropical Ulcer .. | .. | 4 | .. | 4 | 1 | 645 | 249 | 894 |
| D.—Other Ulcers .. | 16 | 137 | 2 | 153 | 9 | 10,030 | 2,981 | 13,011 |
| 155 Other Diseases of the Skin – | | | | | | | | |
| Erythema .. .. | .. | .. | .. | .. | .. | 16 | 2 | 18 |
| Urticaria .. . | .. | .. | .. | .. | .. | 21 | 3 | 24 |
| Eczema .. .. | .. | 6 | .. | 6 | .. | 412 | 238 | 650 |
| Herpes .. .. | .. | 3 | .. | 3 | .. | 23 | 3 | 26 |
| Psoriasis .. .. | .. | .. | .. | .. | .. | 13 | 4 | 17 |
| Elephantiasis .. .. | 4 | 49 | .. | 53 | 1 | 163 | 28 | 191 |
| Myiasis .. .. | .. | 1 | .. | 1 | .. | 3 | 1 | 4 |
| Chigoes .. .. | .. | 9 | .. | 9 | .. | 720 | 288 | 1,008 |
| Other Diseases .. | 1 | 20 | .. | 21 | 1 | 949 | 312 | 1,261 |
| X. Diseases of Bones and Organs of Locomotion (other than Tuberculous). | | | | | | | | |
| 156 Diseases of Bones .. | 1 | 14 | 2 | 15 | .. | 24 | 5 | 29 |
| 157 Diseases of Joints— | | | | | | | | |
| Arthritis .. .. | 2 | 17 | 1 | 19 | .. | 402 | 191 | 593 |
| Synovitis .. .. | .. | 20 | .. | 20 | 1 | 169 | 39 | 208 |
| 158 Other Diseases of Bones or Organs of Locomotion .. | 1 | 14 | .. | 15 | .. | 1,503 | 803 | 2,306 |
| XI. Malformations. | | | | | | | | |
| 159 Malformations .. | .. | 2 | .. | 2 | .. | 5 | 4 | 9 |
| XII. Diseases of Infancy | | | | | | | | |
| 160 Congenital Debility .. | .. | .. | .. | .. | .. | 9 | 6 | 15 |
| 161 Premature Birth .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 162 Other affections of Infancy .. | .. | .. | .. | .. | .. | 6 | 6 | 12 |
| 163 Infant Neglect (infants of three months or over) .. | .. | .. | .. | .. | .. | 1 | .. | 1 |
| Carried forward .. | 178 | 3,142 | 231 | 3,320 | 192 | 84,932 | 39,431 | 124,363 |

## Tables V. and VI.—(*Continued.*)

| Diseases. | In-patients. | | | | | Out-patients. | | |
|---|---|---|---|---|---|---|---|---|
| | Remaining in Hospital at the end of 1929. | Y'ly. Total | | Total Cases Treated. | Remaining in Hospital at the end of 1930. | Males. | Females. | Total. |
| | | Admitted. | Deaths. | | | | | |
| Brought forward .. | 178 | 3,142 | 231 | 3,320 | 192 | 84,932 | 39,431 | 124,363 |
| XIII. Affections of old Age. | | | | | | | | |
| 164 Senility .. .. | 45 | 80 | 50 | 125 | 61 | 57 | 42 | 99 |
| Senile Dementia .. | .. | 4 | .. | 4 | .. | 10 | 11 | 21 |
| XIV. Affections Produced by External Causes. | | | | | | | | |
| 175 Food Poisoning .. | .. | .. | .. | .. | .. | .. | 2 | 2 |
| 176 Attacks of Poisonous Animals | | | | | | | | |
| Snake Bite .. .. | .. | .. | .. | .. | .. | 6 | .. | 6 |
| Insect Bite .. .. | .. | .. | .. | .. | .. | 24 | .. | 24 |
| 177 Other accidental Poisonings | .. | 2 | .. | 2 | .. | 1 | 2 | 3 |
| 178 Burns (by Fire) .. | 1 | 17 | 3 | 18 | .. | 260 | 132 | 392 |
| 179 Burns (other than by Fire).. | .. | 3 | .. | 3 | .. | 43 | 20 | 63 |
| 182 Drowning (accidental) .. | .. | 1 | .. | 1 | .. | 1 | 1 | 2 |
| 183 Wounds (by Firearms, war excepted) .. .. | .. | 4 | .. | 4 | .. | 5 | .. | 5 |
| 184 Wounds (by cutting or stabbing Instruments) .. | 7 | 131 | 2 | 138 | 5 | 3,724 | 538 | 4.262 |
| 185 Wounds (by Fall) .. | 1 | 71 | .. | 72 | 3 | 2,051 | 191 | 2,242 |
| 186 Wounds (in Quarries or Mines) .. .. | .. | 1 | .. | 1 | .. | 35 | .. | 35 |
| 187 Wounds (by Machinery) .. | 1 | 13 | .. | 14 | .. | 137 | 10 | 147 |
| 188 Wounds (crushing, e.g., railway accidents, etc.) .. | .. | 10 | 1 | 10 | .. | 19 | 1 | 20 |
| 189 Injuries inflicted by Animals, (bites, kicks, etc.) .. | .. | 12 | 1 | 12 | .. | 43 | 5 | 48 |
| 192 A.—Over fatigue .. | .. | .. | .. | .. | .. | .. | .. | .. |
| B.—Hunger or Thirst .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 194 Exposure to Heat—Heatstroke .. .. | .. | 1 | .. | 1 | . | 20 | 3 | 23 |
| 201 A.—Dislocation .. | .. | 4 | .. | 4 | 1 | 10 | 1 | 11 |
| B.—Sprain .. .. | 1 | 8 | .. | 9 | .. | 290 | 25 | 315 |
| C.—Fracture .. .. | 6 | 60 | 4 | 66 | 3 | 107 | 22 | 129 |
| 202 Other external Injuries .. | .. | 28 | .. | 28 | 2 | 2,608 | 475 | 3,083 |
| 203 Deaths by Violence of unknown cause .. | .. | .. | .. | .. | .. | .. | .. | .. |
| XV. Ill-Defined Diseases. | | | | | | | | |
| 204 Sudden Death (cause unknown) .. .. | .. | .. | .. | .. | .. | .. | .. | .. |
| 205 A.—Diseases not already specified or ill-defined— | .. | .. | .. | .. | .. | .. | .. | .. |
| Ascites .. .. | .. | 11 | 4 | 11 | .. | 13 | 8 | 21 |
| Œdema .. .. | .. | .. | .. | .. | .. | 26 | 7 | 33 |
| Asthenia .. .. | 11 | 79 | 19 | 90 | 16 | 849 | 536 | 1,385 |
| Shock .. .. | .. | 5 | .. | 5 | .. | 7 | 3 | 10 |
| Dentition .. .. | .. | .. | .. | .. | .. | 2 | 1 | 3 |
| Hyperpyrexia .. | .. | .. | .. | .. | .. | .. | .. | .. |
| Pyrexia of uncertain origin .. .. | 1 | 18 | .. | 19 | .. | 860 | 149 | 1,009 |
| N. Y. D. and Unclassified | 1 | 1 | .. | 2 | .. | 51 | 7 | 58 |
| B.—Malingering .. | .. | 3 | .. | 3 | .. | 8 | .. | 8 |
| Total .. | 253 | 3,709 | 315 | 3,962 | 283 | 96,199 | 41,623 | 137,822 |

## APPENDIX I.

### REGISTRATION OF MEDICAL PRACTITIONERS, DENTISTS AND DRUGGISTS.

The Registration Board consists of the Director of Medical and Sanitary Services, the Deputy Director of Sanitary Services and one registered private medical practitioner. Dr. R. S. Taylor acted throughout the year as the non-Government member of the Board.

Three meetings of the Board were held during the year and six medical practitioners (two in Government service) and one druggist were registered. Owing to absence from the Protectorate for the prescribed period, the names of one medical practitioner, one dentist and two druggists were removed from the Register.

At the beginning of the year there were on the Register, 22 medical practitioners, 5 dentists and 21 druggists; at the end of the year 27 medical practitioners, 4 dentists, and 20 druggists: Actually resident in the Protectorate at the end of the year there were 20 medical practitioners, 1 dentist and 20 druggists of whom 9 medical practitioners and 5 druggists were in Government service.

## APPENDIX II.

## FUNZI ISLAND LEPER SETTLEMENT.

### 1. JOINT REPORT BY MISS MIDDLETON, SUPERINTENDENT AND DR. J. M. SEMPLE, VISITING MEDICAL OFFICER.

1. As during the previous year, so during 1930, the prevailing spirit on Funzi was one of contentment.

2. The wages fund operated throughout the year and all minor repairs and whitewashing of buildings was carried out by the lepers themselves. The side-issues resulting from the payment of wages such as the shop, savings bank, etc., continued to flourish and there is no doubt that the institution of the wages fund has been more than justified.

3. Each of the inmates of the asylum was examined once a quarter, and during the two quarters June-December those not showing any improvement with specific treatment were systematically examined for concurrent diseases. In the case of thirty-five patients a Kahn test was carried out and twenty-four positive results obtained. Courses of B.S.P.T. (or N.A.B. in the case of those who developed stomatitis) were given to the Kahn-positive patients and in all cases a more or less marked improvement was noted in their general condition. The same might also be said of those treated for ankylostomiasis, malaria, etc., but it was in those receiving anti-syphilitic treatment that the improvement was most marked.

During the latter half of the year specific treatment, which had hitherto been voluntary and consequently in very many cases spasmodic and irregular, was made compulsory. The benefit of this was soon obvious and before the end of the year those who had, in the beginning, grumbled at compulsory treatment were the first to admit its efficacy and to appreciate its results.

4. Of the eighteen new cases admitted during the year, eight were from Wete District and in the case of seven of these, who were admitted during the last half of the year, the Melical Officer visited their homes and examined all the more or less immediate contacts that could be found. These amounted to 51 persons, of whom one proved to be an infectious leper and was segregated. The remainder showed no signs or symptoms of leprosy. In addition a total of about 100 persons were examined at random round and about the areas in which the various lepers were discovered.

5. It was found that paroled lepers attended very irregularly for treatment at Wete leper clinic, and in some cases did not attend at all. A "round-up" of all the paroled lepers in the district was therefore made with the assistance of the District Officer. As a result it was discovered that out of 17 paroled lepers, six could not be traced, and six complained that they lived too far away from Wete to attend for weekly treatment. Arrangements were therefore made that the latter should attend at the nearest district dispensary for treatment on the Medical Officer's visiting day. This has worked admirably, and is much appreciated by the paroled lepers.

6. In the course of the year the asylum was visited twice by the Director of Medical and Sanitary Services and once by Dr. Cochrane, the Secretary of the Empire Leprosy Relief Association, who wrote a most gratifying and encouraging report on his visit. The Provincial Commissioner, Pemba, paid several visits, mostly in the first half of the year.

7. During the year, presents of money, clothing and other articles were made to the inmates of the settlement by Messrs. K. William and Co., Mr. F. Allibhai Ebrahimji, Mr. W. Grazebrook, M.C., the Chief Engineers of Government steamers, the Rev. H. W. Weigall and the ladies of the U.M.C.A. These were greatly appreciated by the patients.

The following tables give statistical particulars of the asylum during the past year:—

| | M. | F. | Total. | M. | F. | Total. |
|---|---|---|---|---|---|---|
| Number of Lepers in Funzi Asylum 1st January, 1930 ... | 75 | 54 | 129 | | | |
| Number of new cases admitted in 1930 ... | 14 | 4 | 18 | | | |
| Number of lepers re-admitted in 1930 ... | 2 | 1 | 3 | | | |
| | | | | 91 | 59 | 150 |
| Number of deaths in asylum (including one drowned) | 12 | 4 | 16 | | | |
| Number of births in Asylum ... | (2 | — | 2) | | | |
| Number paroled from asylum as below :— | | | | | | |
| To Walezo 3M and 8F<br>To Homes 9M and 2F ... | 12 | 10 | 22 | | | |
| Number remaining in Funzi Asylum at beginning of 1931 ... | 67 | 45 | 112 | | | |
| | | | | 91 | 59 | 150 |

Of the 16 deaths, 11 were due to senility, combined in three cases with ankylostomiasis, two to pulmonary tuberculosis, two to advanced leprosy, and one to accidental drowning.

Both births occurred in October and the infants are thriving.

Number of admissions to Funzi Asylum by Districts throughout the year:—

| | M. | F. | Total. | | |
|---|---|---|---|---|---|
| Zanzibar Southern District | 1 | 2 | 3 | Zanzibar | 4 |
| Zanzibar Northern District | 1 | — | 1 | | |
| Pemba, Mkoani District | 1 | 2 | 3 | Pemba | 14 |
| Pemba, Chake Chake District | 3 | — | 3 | | |
| Pemba, Wete District | 8 | — | 8 | | |

Number of reputed lepers recorded in Wete District for 1930:—

| | |
|---|---|
| Suspected ... | 5 |
| Segragated ... | 8 |

## 2. Report by Chairman of Visiting Committee.

The asylum was throughout the year under the superintendence of Miss A. F. Middleton who was assisted by Miss M. Powell.

Dr. D. D. McCarthy was Medical Officer in-charge until the end of May when he was relieved by Dr. J. M. Semple who remained in charge for the rest of the year.

At the beginning of the year there were 129 inmates. Sixteen deaths occurred during the year in the course of which 18 new and three old cases were admitted. Twenty-two lepers were paroled, half of whom were received into the Poor Hospital at Walezo, Zanzibar and half of whom proceeded to their own homes. Two births occurred towards the end of the year and both infants are doing remarkably well. The number of lepers remaining in the asylum at the end of the year was 112, of whom 67 were males and 45 females.

Treatment was continued along the lines of previous years, namely bi-weekly Alepol injections supplemented by Hydnocreol and Hydrocarpus nuts. Intercurrent diseases were, as hitherto, treated from the asylum dispensary which is run by the Lady Superintendent assisted by a leper dresser.

A quarterly examination of all lepers has been carried out and during the latter half of the year specific treatment was made compulsory to the immense benefit of those who had previously undergone such treatment voluntarily and, in consequence, often irregularly.

The wages system instituted in 1929 is now well established and is a source of profit to the asylum generally. It permits of minor repairs to buildings being done by the inmates themselves who are thereby enabled to purchase small comforts with their earnings. Both the shop which is run by Miss Powell and the Savings Bank which was organised last year by Miss Middleton continue to be well patronised.

The school which is presided over by Miss Powell continues to attract pupils. At the end of the year there were 19 lepers on the attendance register of which three were women. Miss Powell has also conducted a very successful sewing class for the latter.

The amount of cultivated land in the settlement continues to increase and during the year efforts were made to introduce new varieties of fruit and ground crops. A small horticultural show was organised during the year by the Lady Superintendent and was enthusiastically supported by the inmates.

Apart from the burning down of a hut by a disgruntled member of the community who was promptly removed from the settlement, the behaviour of the inmates has been uniformly good, the prevailing spirit being one of peace and contentment.

The island was visited on two occasions by the Director of Medical and Sanitary Services. On the occasion of his visit in April he was accompanied by Dr. Cochrane, the Secretary of the Empire Leprosy Relief Association, who was greatly impressed by what he saw. Visits were also paid by Mrs. Rankine, the Provincial Commissioner, Pemba and the Honourable Mr. Grazebrook, member of the Legislative Council.

In conclusion, it is my privilege once again to pay a tribute to the splendid devotion and steadfastness of purpose of Miss Middleton and Miss Powell and to the unflagging interest of the Medical Officers.

## 3. REPORT ON LEPROSY IN THE ZANZIBAR PROTECTORATE

BY

DR. G. R. COCHRANE, M.D., M.R.C.P., D.T.M. & H.

SECRETARY,

BRITISH EMPIRE LEPROSY RELIEF ASSOCIATION.

I arrived in Zanzibar from Tanga on April 13th and proceeded to the British Residency. His Excellency, the British Resident, very kindly invited me to stay with him during the time I was to be in the Island.

On the 14th of April I visited the large Government school in Zanzibar. One frequently is able to form a fair idea as to the prevalence of leprosy by examining a large number of school children. If the incidence of the disease is high one is almost certain to discover a number of early cases on the examination of the children in the local schools. It was for this reason then that I made an examination of the boys in the Government High School. There was, however, only one boy in the school, who showed any suspicious signs, and even in this case I was not able definitely to pronounce an opinion.

The prison is another place where early cases sometimes are found. Owing to an attack of malaria, which confined me to hospital for ten days, I was unable to visit the prison until the 25th of April. I not only examined all the prisoners, but also about one hundred members of the police force. I was, however, only able to discover two cases among the prisoners. Both these were in very healthy strong adults, who each presented an isolated hypopigmented patch. I came to the conclusion that in both instances the lesions were of an abortive type, and the cases did not need to come under treatment.

While in Zanzibar I also visited the poor house where the very advanced cases, which had become arrested, and were too deformed to return to society, were housed. All the cases, with the exception of three, were old, advanced, burnt-out cases. The three referred to had only signs of slight activity remaining. The people in this institution lived under as natural conditions as possible, and one of the Sisters of the Roman Catholic Mission visited daily to attend to their simple wants, and give any needed medical relief.

I also visited the U.M.C.A. Mission, where there is quite a large out-patient dispensary. I was unable to discover any lepers among the patients who attended for treatment or other diseases. I am of opinion that leprosy is not very common in Zanzibar Island, probably the cases which are discovered and sent to Funzi Island come from a few scattered foci, and not generally from the whole island. I shall be suggesting later that these foci could probably be discovered if a system of examining all known contacts was brought into operation.

On the 29th of April I was able to visit Pemba Island, and make a journey to the Funzi Leper Settlement. I left Zanzibar accompanied by Dr. Taylor, the Honourable Director of Medical and Sanitary Services, and visited *en route* to Funzi, Mkoani and Chake Chake. On our way to Wete, the Government boat stopped at Funzi and we visited the leper settlement.

Funzi Island is situated some four or five mlies from Wete, the Chief Government station on the mainland. The Medical Officer in charge at Wete visits the island and supervises treatment. The number of cases isolated at Funzi when visited was 127, fifty of which were women. I had the opportunity of examining all the cases and discussing their condition and treatment with the Government medical officer and the two sisters in charge of the settlement. All the cases which were seen were unfortunately very advanced, and without exception had the disease on an average over three years before discovery. Not only that, but when discovered the cases are usually well into the skin stage. This means that the early cases are not being discovered, and therefore some years elapse before they are either treated or segregated. Before I make suggestions regarding the examination of contacts, and the discovery of early cases, I shall first consider the development of the Leper Settlement.

It is difficult to make suggestions regarding wards, etc., in a leper colony, for the type of building depends on the available material, transport and other factors. I think, however, when new buildings are erected in the future, it might be well to abandon the barrack system. It is very essential that patients should have as much fresh air as possible, and when wards are built back to back there is practically no through ventilation. It would be better then, if other wards are contemplated, that they should be single wards. A convenient size is one building containing three wards, in dimension about 12 × 12. Ventilation spaces should be large enough and sufficiently high so that there is no possibility of their being closed by the patients. With regard to patients' houses in Africa, I am in favour of the native type of hut, as patients feel more at home. The huts, however, which exist in the settlement could be improved so that more ventilation can be secured. A type of hut similar to that seen in police barracks, would be excellent for the purpose.

Much praise is due to the two U.M.C.A. sisters who are stationed on the island. Their self-sacrificing work is, I know, appreciated by all, and the happiness and cheerfulness of the inmates testifies to the efficient way the settlement is run. I was very pleased to see how well both specific treatment and general treatment was carried on. The lack of suitable hospital accommodation is badly felt. While it is desirable that the patients in a settlement should live as naturally as possible, yet there should be hospital facilities for cases needing particular attention. It is very difficult adequately to tend patients who are ill or need constant dressings in their own wards. I should respectfully suggest then that when funds are available, a small central hospital block should be erected. This block should consist of a small operating theatre and two wards, one for male, and the other for female patients, with about five or six beds in each.

There is one other matter which I feel I must mention. On our return journey to the mainland the motor boat broke down and we did not reach the Government boat at Wete until after 10 p.m. A message was sent to the Government officer at Wete, but this did not arrive until the following morning. While for us this was not a serious matter, yet it suggests that the communications between the leper island and the responsible government official are not what they should be. This is especially the case after dark. One does not wish to be unduly pessimistic, but should any unforeseen incident occur, an awkward situation might arise before assistance could be given. I think therefore, it is imperative that a better means of communication be devised. It should be a simple matter to run a telephone across to the mainland, or, failing that, an overhead wire, across which messages could be sent. An urgent message should have some distinguishing mark so that the messenger would know that no time should be lost before delivering it in to some responsible officer's hands. While the nurses on the Island have not complained, I think that it is only right that they should have a more reliable means of communication than they have at present.

I shall be dealing with the place of the settlement and general anti-leprosy measures at the close of this report, and therefore I shall now pass on to other matters.

While on Pemba Island I visited several hospital dispensaries and schools, primarily on the look out for early cases. There was practically no evidence of the early cases, as I only discovered one suspicious case in one of the schools. I am of opinion, therefore, that both in Zanzibar and Pemba leprosy is not a serious problem, and that if the foci could be discovered the disease could be controlled in a comparatively short time.

While in Zanzibar I paid a visit to the Government agricultural farm where a large number of hydnocarpus anthelmintica trees were under cultivation. I was surprised to see the healthy appearance of the trees, and it seems evident that the soil is suitable for the growth. The trees are rather young yet, and therefore one cannot say whether the conditions are suitable for fruit production. I have suggested that hydnocarpus wightiana should be planted as well. I am of opinion that climatic conditions are probably more favourable to the latter variety of tree than to the former. Unless there are indications that the trees are going to grow well, then it is useless to plant them, but if it has been proved that soil and other conditions are suitable, then it is worth while to make a plantation and extract the oil for local use. It appears to me that the Government is justified in importing seeds of hydnocarpus wightiana for growth on a commercial scale. Should this undertaking prove successful, then I would suggest that the Government should get into touch with other East African Governments, in order to investigate the possibility of supplying all the East and South African colonies and dependencies.

From my very brief visit to Zanzibar it appears that leprosy is not extremely prevalent in the islands, and therefore it should be a comparatively easy matter to bring it under control. I think that there is little doubt that there are certain fairly heavy foci of leprosy, and that in the greater part of the territory the incidence of the disease is not very high. If then these foci could be traced it should not be difficult to discover the early cases. It should also be possible to institute a system of examination of contact cases. It has been suggested that leprosy is not generally widespread in the Protectorate, and by examining contacts and their families there would be a fair chance of discovering the foci of the disease, and thus bringing it under control. Before such a scheme could succeed, it would be necessary to do a certain amount of propaganda. I should suggest to start with that an area should be chosen in which, from the number of cases sent to Funzi, the leprosy incidence is known to be fairly high. A start could be made by organising a gathering of the responsible men of the villages in this area, and describing, if possible with the aid of a lantern, what can be done for leprosy. This should be followed by an invitation to those who have come in contact with lepers, especially those who have, or have had, leprosy, to be present at a given time, when they would be examined by an experienced officer. A native usually is able to diagnose the disease, or suspect it at early stage. It should also be impressed upon the villagers that all non-infective, even early infective cases, provided that there was no positive nasal discharge, would not be asked to go to Funzi, but would go to a local dispensary for treatment. I feel sure if this were done then early cases would be encouraged to report themselves and come for treatment. It might be found useful to appoint a trained native dispenser, whose chief work would be the examination of contacts, and the reporting of any suspicious cases to the D.M.O., who could then decide as to the necessity of treatment at a local dispensary. I feel certain that if such a system were organised, in a matter of a few years the chief foci of leprosy would be discovered, and once these were discovered then it would be known whether there was a need for the further training of dispensers and the organising of special leprosy clinics.

I have not suggested that a European officer should be appointed, for I feel that neither the funds available in the Protectorate, nor the amount of leprosy prevalent justifies such an expenditure at present. Similarly, while it would be valuable to have a special leprosy officer stationed on Funzi Island, I doubt whether the Protectorate is justified in making such an appointment. It is essential to view leprosy in the right perspective, and while it is an important endemic disease, yet it is only one among a number. In a small colony, where medical officers are few, there is little justification for appointing a special leprosy officer unless the incidence of the disease is unusually high; a few trained and reliable dispensers could probably accomplish all that is needed.

While I cannot at present advise the appointment of a specialist officer solely doing leper work, yet I feel if any scheme for the training of dispensers is to succeed, the medical officer at Wete should, as far as possible, not be moved. It is most detrimental to efficient work if just as a medical officer has acquired a fair working knowledge of the disease, he is moved to another district, and a new officer is put in charge who has to start afresh and gain his own experience. I would suggest then that the District Medical Officer at Wete be kept there as long as possible, at least until a sufficient number of D.M.O.'s had been trained, so that if it were essential to transfer him to another district there would be someone else able to carry on his work who had a fair working knowledge of the disease. If on his way home, or on his return from leave, he could spend a month or so at some other institution, it would be of great help. There are such institutions as Gomohuru in Southern Rhodesia, Emjanyana or Pretoria in South Africa. In the case of the present Medical Officer at Wete, it would not be difficult to visit one or more of the excellent institutions in India on his way back from New Zealand.

The further development of the present system would be as follows:—

(1) The development of Funzi along the lines already indicated.
(2) The training of native dispensers at the leper settlement at Funzi in order that they could give routine leprosy treatment to cases not needing segregation.
(3) Training of medical men at Funzi in diagnosis and treatment of disease.
(4) The organisation of the examination of contact cases by means of trained dispensers.
(5) The gradual survey of districts in the Protectorate in the endeavour to ascertain the actual prevalence of the disease.
(6) In certain areas, if a large number of lepers were found, it might mean the establishment of new dispensaries.
(7) Well balanced and gradual propaganda in schools and among village headmen and chiefs.

The Protectorate of Zanzibar is comparatively small, the country is easily organised, and therefore there should be little difficulty in ultimately setting up an organisation on the lines indicated. I feel certain that such an organisation would cost little to develop, and would, in the course of a decade or two, bring the problem practically under control.

In closing this Report I should like to thank His Excellency the Resident, and the Government for the generous way they helped me to study the leprosy problem in the islands. I should particularly like to put on record my deep appreciation of the help of Dr. Taylor, the Hon. D.M.S.S., and of his courtesy in accompanying me on my trip to Funzi, and for all his assistance. I trust my visit has materially helped those who are endeavouring to combat this problem.

## APPENDIX III.

### CONTROL OF OPIUM.

The following are the particulars regarding opium addicts:—

| | 1928 | | 1929 | | 1930 | |
|---|---|---|---|---|---|---|
| | M. | F. | M. | F. | M. | F. |
| Number of opium addicts remaining from the previous year ... | 67 | 28 | 66 | 28 | 57 | 24 |
| Number of applications for permits during the year | 2 | 1 | 6 | 2 | 4 | 2 |
| Number of permits granted during the year ... | 2 | 1 | 6 | 2 | 4 | 2 |
| Number of permits refused during the year ... | — | — | — | — | — | — |
| Number of permits cancelled | | | | | | |
| (*a*) owing to death ... | 3 | 1 | 4 | 1 | 5 | 0 |
| (*b*) owing to other causes ... | — | | 11 | 5 | — | — |
| Number of opium addicts remaining at the end of the year ... | 66 | 28 | 57 | 24 | 56 | 26 |
| | ozs. | | ozs. | | ozs. | |
| Amount of opium issued to addicts during the year ... | 339.5 | | 358.08 | | 429 | |
| | Rs. | | Rs. | | Rs. | |
| Amount received in payment for opium issued ... | 2,121-87 | | 2,238-05 | | 2,598-75 | |

## APPENDIX IV.

### TWELFTH ANNUAL REPORT OF THE ZANZIBAR MATERNITY ASSOCIATION FOR THE YEAR ENDING 31ST DECEMBER, 1930.

The year under review has been one of gratifying progress, 38 more cases (births and miscarriages) having been attended by the Association midwives than were attended during the year 1929. Not only was a greatly increased number of visits paid to patients in their own houses but valuable maternity and infant welfare work was also carried out in other directions.

2. A feature of the year's work was the keen interest taken by native women in the activities of the Association. A large number sought both ante-natal and post-natal advice, no fewer than 99 cases (95 births and 4 miscarriages) being attended, of which all but three were admitted to the Maternity Home. In all, 115 patients were admitted to the Home whilst 5,324 out-patient attendances were recorded for ante-natal, post-natal and gynæcological advice or treatment. At the general dispensary connected with the Home, the attendances of women and children for the treatment of all kinds of ailments amounted to 32,177 of which 9,688 were new cases and 22,489 were re-attendances.

3. The training was undertaken by the Matron of a number of apprentice midwives, four of whom, one Indian and three Goans, completed their training during the year and passed the prescribed examination which entitles them to practice within the Protectorate. Three are, however, at their request being retained in the Home on a small salary in order to assist the Matron and to gain additional practical experience.

4. It is with some regret that the Committee records the fact that no special donations were made to the Association during the past twelve months. Owing, however, to a reserve balance, it hopes to be able to meet all liabilities during the coming year in spite of the increased expenditure necessitated by extended activities. A stage has, however, now been reached when progress will be retarded without further assistance. The principal immediate requirement is the extension of the Maternity Home to provide additional accommodation for patients and quarters for a nurse to assist the Matron. During the past year considerable difficulty was, at times, experienced in providing accommodation for all those seeking admission and any marked increase in the number of in-patients will render imperative the appointment of a resident assistant.

5. The success which has attended the efforts of the Association during the year is largely attributable to the tireless energy of the Matron, Miss B. J. Locket, whose skilful and sympathetic treatment is rapidly breaking down native prejudice. In recording its deep

appreciation of her valuable services, the Committee desires at the same time to thank the midwives who have worked with her for the zeal and devotion which they have brought to bear upon their work.

6. In conclusion, the Committee tenders its thanks to the Honourable Mr. N. B. Cox who audited the Association's accounts, Mr. A. A. Albuquerque, its Honorary Treasurer, who, in addition to performing the special duties of office, rendered valuable assistance in all matters affecting the welfare of the Association, and to Mr. M. F. Fernandes who, during Mr. Albuquerque's absence from the Protectorate, filled with credit the latter's role.

J. P. JONES,
Honorary Secretary.

## THE ZANZIBAR MATERNITY ASSOCIATION.

Statement of Receipts and Payments for the year ending 31st December, 1930.

### RECEIPTS.

| | Rs. | A. | P. | Rs. | A. | P. |
|---|---|---|---|---|---|---|
| By | | | | | | |
| Balance | 7,947 | 10 | 3 | | | |
| Subscription | 4,425 | 0 | 0 | | | |
| Fees | 4,667 | 0 | 0 | | | |
| Miscellaneous Receipts | 160 | 0 | 0 | | | |
| Government Grant | 7,500 | 0 | 0 | 24,699 | 10 | 3 |
| Total Rs. | | | | 24,699 | 10 | 3 |

### PAYMENTS.

| | Rs. | A. | P. | Rs. | A. | P. |
|---|---|---|---|---|---|---|
| To | | | | | | |
| Salaries | 13,920 | 0 | 0 | | | |
| House Allowances | 1,125 | 0 | 0 | | | |
| Uniforms | 12 | 11 | 0 | | | |
| Equipment for Midwives | 6 | 12 | 0 | | | |
| Incidental Expenses | 199 | 8 | 0 | | | |
| Maternity Home :— | | | | | | |
| Servants | 420 | 0 | 0 | | | |
| Incidentals | 76 | 0 | 0 | | | |
| Lighting | 108 | 13 | 0 | 15,868 | 12 | 0 |
| Balance :— | | | | | | |
| Fixed Deposit with N.B. of India | 4,000 | 0 | 0 | | | |
| Current Account ,, ,, ,, | 4,830 | 13 | 3 | | | |
| | | | | 8,830 | 14 | 3 |
| Total Rs. | | | | 24,699 | 10 | 3 |

Audited and found correct.

N. B. COX.

A. A. ALBUQUERQUE,

*Hon. Treasurer.*

## TABLE I.

Cases attended by the Association Midwives during the year 1930 showing the number of each nationality attended as compared with the total number of births among each nationality registered in Zanzibar Town:—

| Nationality. | Live Births. | Still Births. | Miscarriages. | Total | Live Births Registered. |
|---|---|---|---|---|---|
| African Natives | 83 | 12 | 4 | 99 | 133 |
| Comorians | 10 | 5 | — | 15 | 10 |
| Shihiris | 5 | 2 | — | 7 | 12 |
| Arabs | 30 | 3 | 2 | 35 | 66 |
| Bohoras | 56 | 5 | 5 | 66 | 57 |
| Ithnasreris | 70 | 7 | 12 | 89 | 71 |
| Ismailis | 12 | 2 | 1 | 15 | 73 |
| Memons | 14 | 1 | — | 15 | 48 |
| Other Asiatic Mohammedans | 4 | — | — | 4 | |
| Hindus | 26 | 1 | 1 | 28 | 64 |
| Bhattias | 9 | 0 | 1 | 10 | 11 |
| Goans | 29 | 0 | 1 | 30 | 39 |
| Other Nationalities | 1 | — | — | 1 | 19 |
| | 349 | 38 | 27 | 414 | 603 |

## TABLE II.

Comparative Statistics of cases attended by the Association Midwives from 1919-1930:—

| | 1919 | 1920 | 1921 | 1922 | 1923 | 1924 | 1925 | 1926 | 1927 | 1928 | 1929 | 1930 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| African Natives | — | — | 11 | 11 | 12 | 18 | 18 | 38 | 44 | 83 | 77 | 99 |
| Comorians | — | 2 | 6 | 6 | 4 | 6 | 7 | 12 | 8 | 12 | 20 | 15 |
| Arabs | — | — | 20 | 13 | 21 | 31 | 27 | 18 | 17 | 13 | 30 | 35 |
| Shihiris | — | — | — | 1 | 4 | 2 | 3 | 2 | 1 | 2 | 5 | 7 |
| Total | — | 2 | 37 | 31 | 41 | 57 | 55 | 70 | 70 | 110 | 132 | 156 |
| Foreign Communities | 46 | 59 | 55 | 147 | 96 | 184 | 197 | 196 | 180 | 210 | 246 | 258 |
| Grand Total | 46 | 61 | 92 | 178 | 137* | 241* | 252 | 266 | 250 | 320 | 378 | 414 |

**Note* :—Total cases including miscorriages in 1923 and 1924 were 151 and 256 respectively.

## TABLE III.

### Membeladu Maternity Home.

Cases admitted to the Home during 1930:—

| Nationality | Births. | Miscarriages. | Total. |
|---|---|---|---|
| African Natives | 92 | 4 | 96 |
| Arabs | 10 | 1 | 11 |
| Shihiris | 2 | — | 2 |
| Comorians | 7 | — | 7 |
| Baluchis | 1 | — | 1 |
| Total | 112 | 5 | 117 |

### Welfare Attendances at the Home.

| | |
|---|---|
| Ante-Natal | 1,371 |
| Post-Natal | 978 |
| Gynæcological | 2,975 |
| Total | 5,324 |

## APPENDIX V.

### REPORT BY MR. A. S. NEWTON, DENTAL SURGEON, TANGANYIKA TERRITORY AND ZANZIDAR.

As the writer proceeded on home leave at the end of June, only seven weeks were spent in the Protectorate, divided into two visits—one in January and the other May—June.

The following is a summary of the European work done:—

| | |
|---|---|
| Attendances | 247 |
| Fillings | 48 |
| Extractions (Local Anæsthesia) | 27 |
| Extractions (General Anæsthesia) | 19 |
| Scaling and Gum Treatments | 29 |
| Pulp Treatments | 14 |

As in previous reports the above figures refer merely to the work done for European officials their wives and families. The subordinate staff with their wives and families and the native school children were also treated as extensively as time permitted.

Prosthetic dentistry, as on previous occasions, was not possible owing to the short duration of the visits.

Should a whole time Dental Surgeon appointment become a *fait accompli*, as persistently recommended by the writer, future reports should also include work done for the subordinate staff and school children and particularly the results of periodical inspections of the latter to show and emphasise the rapid improvement in general and dental health which will assuredly result from regular dental education and treatment.

The writer finds himself considerably handicapped in his work by the lack of a dental X-ray unit such as in daily use in the Dar-es-Salaam and Tanga Surgeries.

The provision of some such unit is particularly important in this Protectorate, where the writer is continually being called upon to diagnose and correct conditions which are the unfortunate results of attempts at dental surgery by unqualified persons on the Island.

This illicit practice by these persons is most strongly to be deprecated for, although it may, to the lay mind, appear to fulfil an urgent need of the moment, ultimately the results are definitely harmful and so far from easing the work of the Dental Surgeon, actually increase and complicate it.

A further prevalent malpractice which cannot be too strongly condemned is that of various Asiatics in the native bazaar who display for sale in their dukas trays containing large numbers of so called "Gold Crowns". These *base metal caps* disgustingly harmful, disease producing and disseminating, are available for purchase by any æsthetically ambitious native possessed of, and prepared to part with, the sum of Rs. 3. For this sum the "patient" may amuse himself by trying on and discarding different specimens until he discovers one which approximately fits the selected tooth. Whatever bacteria are responsible for the state of chronic sepsis normally found in the mouths of these cases, are thus left to flourish and reproduce their species *ad infinitum* on the discarded caps.

Thus are infected succeeding aspirants to membership of the Gold Tooth Brigade until they in their turn leave behind them a legacy of bacteria to preserve the continuity of this vicious pathological circle.

Another circumstances responsible for much delay in the treatment of subordinate staff and natives is the lack of a properly equipped second surgery. This is one of the first essential additions required to the present inadequate accommodation.

The dental conditions of the Protectorate as outlined in the writer's report for 1929—Appendix V—unfortunately remain as therein stated and there is nothing to add beyond again emphasising the urgency of a full time appointment as early as possible.

In concluding this report the writer would like to draw attention to the very considerable and valuable assistance which has been continually rendered to this Protectorate during the past 12 years and particularly since 1925, when Zanzibar established a part time Dental Service, by Mr. H. M. Fisher, L.D.S., R.C.S. (Eng.) Senior Dental Surgeon, Dar-es-Salaam.

For eight months per annum and during the absence on leave of the Zanzibar Dental Surgeon, Mr. Fisher has devoted his time and skill to the services of any Zanzibar officials or members of their families visiting him professionally whenever they had need of dental attention.

The writer personally is especially indebted to Mr. Fisher for his willingness at all times to undertake X-ray diagnosis for Zanzibar patients when, owing to the lack of apparatus in the Protectorate's equipment, such examinations were impossible locally.

# ANNUAL VETERINARY REPORT.

## For the Year 1930.

## SECTION I—ADMINISTRATION.

### A. Staff.

The Veterinary Staff for the year consisted of:—

| | |
|---|---|
| Veterinary Officers | 2 |
| Veterinary Cadets | 3 |
| Attendants | 12 |

Veterinary Officer, Mr. Mohamed Ramazan Dar was on leave in India from January to April.

Veterinary Officer, Mr. Shah Mohamed Khan proceeded to India on leave on 24 November.

A Veterinary Cadet posted in Pemba supervised the Veterinary activities there. He was stationed at Chake Chake and paid weekly visits to Wete and Mkoani.

### B. Financial.

The Revenue from Veterinary Services totalled Rs. 20,728-56 cts. and is derived from the following sources:—

| | Rs. | Cts. |
|---|---|---|
| Cattle importation and exportation fees ... | 7,055 | 50 |
| Veterinary Hospital fees ... | 18 | 00 |
| Abattoir fees ... | 6,282 | 25 |
| Landing of cattle fees ... | 1,785 | 89 |
| Wharfage charges for the landing of animals ... | 548 | 42 |
| Rent for Mji Mpia Dairy Sheds ... | 4,444 | 00 |
| Rent for Dairy Shed Sites at Mji Mpia ... | 49 | 00 |
| Goat Lairage at Gulioni ... | 443 | 50 |
| Cremation Fees ... | 102 | 00 |
| Total | 20,728 | 56 |

Expenditure on new buildings, repairs, etc., during the year was as follows:—

| | Rs. | Cts. |
|---|---|---|
| Mji Mpia Dairies ... | 3,314 | 00 |
| Pigaduri Cattle Quarantine Station ... | 1,155 | 00 |
| Slaughter House ... | 39 | 00 |
| Veterinary Hospital ... | — | — |
| Goat Lairage ... | 125 | 00 |
| Total Rs. | 4,633 | 00 |

### C. Legislation.

1. Government Notice No. 17 of 1930, under Section 4 of the Diseases of Animals Decree, 1923, prohibiting importation of canines and felines from India.
2. Government Notice No. 138 of 1930, under Section 2 of the Diseases of Animals Decree, 1923. notifying the inclusion of the diseases melitococcosis and infectious abortion.

## SECTION II.—DISEASES OF ANIMALS.

### A. Diseases of Ruminants.

### *Cattle.*

*Rinderpest.*—An outbreak of this disease occurred at the Quarantine Station in a herd of 66 cattle imported from Lamu on 7th July. Four animals were noticed ill a few days after landing showing the characteristic symptoms of the disease. All these were slaughtered in Quarantine and as a precautionary measure further importation of cattle was temporarily prohibited from Lamu.

*East Coast Fever.*—This is the most important cattle disease in the Protectorate and is endemic in both islands. It appears to have existed for generations and is known amongst the local inhabitants by the name ''Uvimbi''.

Owing to long exposure to infection the indigenous stock possesses considerable resistance and deaths do not occur in such large numbers as in other countries where the disease has been more recently introduced.

An outbreak occurred in a herd of 16 graded cows and 14 calves imported from Kenya Colony on 16th November. Prior to being shipped these animals were kept undipped at Mombasa for about 10 days. On the seventh day after landing at the Quarantine Station a calf was found ill and died soon after. Post-mortem examination showed East Coast Fever and within a week four cows and four calves had died of the disease. The importers suffered a heavy loss. It is suggested that some arrangements be made with the Kenya Veterinary and Railway Authorities, to render special facilities to our milch cattle importers.

Our position regarding the dairy stock is very satisfactory. No deaths from East Coast Fever have occurred amongst these thanks to the efficacy of dipping which is carried out regularly and systematically both at Mji Mpia and the Quarantine Station. The conditions prevailing in the districts are however different. No dipping tanks exist there. It is estimated that some 15 per cent to 20 per cent of the calves die from this cause. Those surviving are immunised for life.

*Trypanosomiasis.*—(Imported Stock.)—During the year 123 oxen imported from Lamu were examined and 20 found infected. The majority had T. congolense infection.

The blood of 21 camels imported from Kismayu and Lamu was examined and five showed T. congolense. In two the parasites resembled T. evansi.

All animals showing trypanosomes infection are killed in Quarantine. The rate of infection is high in animals arriving from Lamu.

*Cysticercus bovis.*—Two camels slaughtered in the abattoir for food were found infected with cysticercus bovis. This infection is rare in camels.

### *Sheep and Goats.*

*Pleuro-pneumonia contagiosa of Goats.*—Twenty-five goats died of this disease at the Quarantine Station during the months of August and September. It is a common disease of goats and sheep imported from Lamu and Kismayu, and it is usually on account of this disease that the carcasses of these animals are condemned.

*Hæmonchiasis.*—This disease occurs in goats but does not appear to cause much serious loss of life.

*Oesophagostomiasis.*—A very common disease of goats.

*Tetanus.*—Was diagnosed in a new born lamb.

## B. DISEASES OF EQUINES.

*Horse Sickness.*—No case reported or seen.

*Tetanus.*—Diagnosed in a mule and a donkey. Both animals were destroyed.

*Epizootic Lymphangotis.*—This disease was found in a stray donkey and the animal was destroyed.

## C. DISEASES OF CANINES.

*Rabies.*—No case recorded or seen.

*Tick Fever.*—One case seen; the animal died.

*Distemper.*—One case occurred during the year. The animal recovered under treatment.

## D. DISEASES OF BIRDS.

*Fowl Cholera.*—This disease was reported to have occurred on one plantation accompanied by a heavy mortality.

*Roup.*—Diagnosed in a turkey.

*Coccidiosis.*—Was twice diagnosed at post-mortems on fowls.

*Pemba.*—No outbreak of any infectious or contagious disease occurred in Pemba. In 1924, Pemba suffered a heavy loss of cattle from Rinderpest and double inoculation of all remaining animals was carried out. This proved of much beneficial result. The stock has increased and quite a large majority of animals slaughtered there are of local origin.

The time does not appear to be very far distant when Pemba will become self-supporting so far as her meat requirements are concerned.

## SECTION III.—GOVERNMENT DAIRY MJI MPIA.

During the year under review the total number of animals housed at the Government Dairy was as follows:—

| | |
|---|---|
| Cows ... | 232 |
| Calves ... | 123 |
| Heifers ... | 87 |
| Bulls ... | 11 |
| Total | 453 |

Of these 175 cows, eight bulls and 80 heifers were kept in Government sheds, rented by private individuals. The remainder were housed in sheds approved by the health authorities and built privately on Government land for which a small rental is paid.

The general health of the animals remained good and there was no outbreak of any infectious or contagious disease.

The drainage work for carrying away the surface water from the site was completed and has proved satisfactory.

All animals kept at Mji Mpia are regularly dipped at a week's interval, the total number of dippings performed being 11,584 for cows and 8,405 for calves.

The dipping fluid is analysed every month by the Government Chemist.

## SECTION IV.—MEAT INSPECTION.

The animals are slaughtered in the Government abattoir under the supervision of this Division. They are brought to the abattoir in the afternoon of the previous day when an ante-mortem inspection is made and unfit animals are rejected.

Slaughtering begins at 4 a.m. and the dressed carcasses are examined before removal to the market. ''Measly'' meat if only slightly infected is thoroughly boiled on the premises and sold at a cheap rate, otherwise the carcass is cremated.

During the year 15,933 animals were slaughtered. Out of these 5,713 were partially and 136 wholly condemned.

Occasionally sanction is given by the Provincial Commissioner after consultation with the Health Officer, to slaughter an animal (usually a goat) on private premises for religious purposes. Such animals are also inspected before slaughter.

## SECTION V.—PIGADURI QUARANTINE STATION.

All live-stock imported into the Protectorate undergo a period of quarantine; for cattle a fortnight and for goats and sheep five days.

Horses and mules imported and not accompanied by a satisfactory certificate of health are subjected to the "Mallein Test".

Blood films are taken from many imported animals and examined for trypanosomes; any found infected are forthwith slaughtered or, if the owner so wishes, returned to their port of origin.

Dogs and cats are not allowed to be imported unless accompanied by a certificate from a Veterinary Surgeon to the effect that the animal is free from Rabies.

The dipping tank was continually in use throughout the year and the cattle were dipped at a three-day interval. The dippings numbered 9,385.

The sea wall on the western side of the station has been repaired and the repairs to the kraals are being carried out.

## SECTION VI.—LAIRAGE FOR GOAT AND SHEEP.

There are 10 sheds, accommodating 500 goats, which are leased to the butchers for housing their animals.

### Table 1.

Comparative table of deaths among stock in Zanzibar Town and Quarantine Station during the year 1928-1930: :—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Milk cows ... | 18 | 34 | 22 |
| Calves ... | 23 | 31 | 20 |
| Cart bullocks and oxen ... | 8 | 8 | 7 |
| Goats ... | 34 | 45 | 37 |
| Sheep ... | 3 | 3 | 1 |
| Horses ... | 6 | 2 | 1 |
| Donkeys ... | 20 | 14 | 25 |
| Mules ... | 3 | 4 | 1 |
| Dogs ... | — | 2 | 4 |
| Camels ... | — | — | — |
| Total | 115 | 143 | 118 |

Considering the number of imported oxen and goats the above table shows a considerable decrease in the number of animals which died during the year 1930, as compared with the previous year.

The dairies at Mji Mpia remained free from any infectious or contagious disease. There was an outbreak of pleuro-pneumonia amongst a herd of goats at Pigaduri Quarantine Station which resulted in the death of twenty-five goats.

### TABLE II.

Comparative table of animals imported during the three years 1928-1930:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Oxen ... | 1,956 | 2,632 | 3,336 |
| Cows ... | 21 | 41 | 46 |
| Calves ... | 7 | 24 | 36 |
| Goats ... | 7,133 | 8,327 | 9,950 |
| Sheep ... | 2,759 | 2,418 | 2,891 |
| Horses ... | — | 2 | — |
| Donkeys ... | 20 | 4 | 73 |
| Camels ... | 2 | 6 | 21 |
| Dogs ... | 1 | 3 | 2 |
| Cat ... | — | 1 | — |
| Total | 11,899 | 13,458 | 16,355 |

With the exception of horses, there has been a remarkable increase in the number of animals imported in the year 1930. As compared with 1929, the year under review shows an increase of 704 oxen, five cows, 12 calves, 1,623 goats, 473 sheep, 69 donkeys and 15 camels.

### TABLE III.

Comparative table of animals exported during the three years 1928-1930:—

| | 1928 | 1929 | 1930 |
|---|---|---|---|
| Oxen ... | 97 | 244 | 262 |
| Cows ... | 1 | 1 | — |
| Calf ... | 1 | — | 1 |
| Goats ... | 63 | 436 | 214 |
| Sheep ... | 10 | 22 | 100 |
| Camels ... | — | 2 | — |
| Mule ... | 1 | — | — |
| Donkeys ... | 16 | 38 | 6 |
| Kids ... | — | — | 5 |
| Dogs ... | 1 | 8 | 1 |
| Pig ... | — | 1 | — |
| Total | 190 | 752 | 591 |

This table shows an increase of 18 oxen and 78 sheep and a decrease of 222 goats.

The majority of exported animals are sent to Pemba.

## TABLE IV.

Table showing the number of animals treated as In- and Out-patients during the year 1930:—

| | |
|---|---|
| Horses | 218 |
| Mules | 22 |
| Donkeys | 331 |
| Bullocks | 91 |
| Cows | 3 |
| Calves | 22 |
| Sheep | 13 |
| Dogs | 149 |
| Cats | 46 |
| Parrots | 22 |
| Turkey | 1 |
| Geese | 16 |
| Canary | 1 |
| Total | 635 |

The above table includes both new cases and repetitions.

The majority of the animals treated were the property of the Government or cruelty cases brought by the police.

### TABLE V.

Table showing the number of animals examined and slaughtered in the Government Abattoir during the year 1930, compared with the previous two years:—

| Species. | Slaughtered in Government Abattoir. | | | Wholly Condemned. | | | Partially. | | | Slaughtered at Pigaduri. | | | Rejected. | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 | 1928 | 1929 | 1930 |
| Oxen ... | 2,131 | 2,347 | 2,925 | 33 | 18 | 69 | 1,845 | 1,405 | 1,529 | Not re- | corded | | Not re- | corded | 141 |
| Cows ... | 256 | 186 | 75 | 4 | 3 | ... | 22 | 8 | 12 | ... | ... | | ... | ... | 2 |
| Calves ... | 98 | 27 | 19 | ... | ... | ... | 2 | 1 | 15 | ... | ... | | ... | ... | ... |
| Goats ... | 10,256 | 9,822 | 9,988 | 35 | 47 | 57 | 3,006 | 2,832 | 3,156 | ... | ... | | ... | ... | 372 |
| Sheep ... | 2,261 | 1,841 | 2,906 | 25 | 14 | 10 | 1,200 | 754 | 976 | ... | ... | | ... | ... | 177 |
| Camels ... | 3 | 9 | 20 | ... | ... | ... | ... | 8 | 25 | ... | ... | | ... | ... | ... |
| Total ... | 15,005 | 14,232 | 15,933 | 97 | 82 | 136 | 6,075 | 5,008 | 5,713 | ... | ... | | ... | ... | 692 |

Forty-three oxen were condemned for measles, eighteen for emaciation, two for cysts and six for contusions.

Thirty goats were condemned for pleuro-pneumonia and twenty-nine for emaciation. Six sheep were condemned for pleuro-pneumonia and four for emaciation. Rejected oxen on ante-mortem inspection numbered 692.

### TABLE VI.

Table showing the number of examinations carried out in the Veterinary Laboratory during 1930:—

Trypanosomiasis (Local Stock):

| | Number examined. | Positive. | Negative. |
|---|---|---|---|
| Oxen ... | 4 | — | 4 |
| Cows ... | 1 | — | 1 |
| Horses ... | 2 | — | 2 |
| Donkeys ... | 15 | — | 15 |
| Camels ... | — | — | — |
| Dog ... | 1 | — | 1 |
| Sheep ... | 1 | — | 1 |
| Total | 24 | — | 24 |

Trypanosomiasis (Imported Stock):

| | Number examined. | Positive. | Negative. |
|---|---|---|---|
| Oxen ... | 123 | 20 | 103 |
| Cows ... | 22 | — | 22 |
| Calves ... | 2 | — | 2 |
| Camels ... | 21 | 5 | 16 |
| Donkeys ... | 14 | — | 14 |
| Total | 182 | 25 | 157 |

East Coast Fever (Local Stock):

| | Number examined. | Positive. | Negative. |
|---|---|---|---|
| Cows ... | 18 | — | 18 |
| Calves ... | 15 | 2 | 13 |
| Oxen ... | 7 | 1 | 6 |
| Total | 40 | 3 | 37 |

East Coast Fever (Imported Stock):

| | Number examined. | Positive. | Negative. |
|---|---|---|---|
| Cows ... | 46 | 11 | 35 |
| Calves ... | 36 | 8 | 28 |
| Bull ... | 1 | 1 | — |
| Total | 83 | 20 | 63 |

Piroplasmosis (Imported Stock):

| | Number examined. | Positive. | Negative. |
|---|---|---|---|
| Cows ... | 16 | 11 | 5 |
| Calves ... | 14 | 8 | 6 |
| Bull ... | 1 | 1 | — |
| Dog ... | 1 | 1 | — |
| Total | 32 | 21 | 11 |

Coccidiosis (Local) :

| | | Number examined. | Positive. | Negative. |
|---|---|---|---|---|
| Fowls | ... | 2 | 2 | — |
| Duck | ... | 1 | 1 | — |
| | Total | 3 | 3 | — |

## TABLE VII.

Table showing the number of Post-Mortems performed during the year 1930:—

| Species. | Rinderpest | E. C. Fever | Red Water Tick Fever | Tetanus | Ulcerative Lymphangitis | Septicæmia | Pleuro Pneumonia | Tympanites | Malnutrition | Colic | Poison | Total. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Oxen | 4 | 1 | 1 | .. | .. | .. | .. | 1 | .. | .. | | 7 |
| Cows | .. | 4 | .. | .. | .. | 4 | .. | 1 | .. | 1 | .. | 10 |
| Calves | .. | 4 | .. | .. | .. | .. | .. | 2 | 3 | .. | .. | 9 |
| Donkeys | .. | .. | .. | 1 | 1 | 1 | .. | .. | .. | 4 | .. | 7 |
| Goats | .. | .. | .. | 1 | .. | .. | 25 | 1 | .. | 1 | .. | 28 |
| Dogs | .. | .. | 1 | .. | .. | .. | .. | .. | .. | .. | 5 | 6 |
| Cat | .. | .. | .. | .. | .. | .. | .. | .. | .. | .. | 1 | 1 |
| Total | 4 | 9 | | 2 | 1 | 5 | 25 | 5 | 3 | 6 | 6 | 68 |

SHAH MOHAMMED KHAN,
*Veterinary Officer.*

BUREAU OF HYGIENE & TROPICAL DISEASES
LIBRARY
21 DEC 1931